IDG.net

Can Windows servers run all the time? **PAGE 44**   Finally, developers get more than .Net vapor from Microsoft. **PAGE 6**

COMPUTERWORLD

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WINDOWS XP MAY SPUR BIOMETRICS

*Support for Fast
User Switching is key*

BY DAN VERTON

Microsoft Corp.'s new Windows XP operating system includes several security feature enhancements. But one of the most significant changes, coming amid a push for increased security, could mean the beginning of widespread use of biometric technology, according to experts.

Biometric technologies provide identity authentication through such methods as fingerprints, iris scans, facial geometry scans and voice scans. Biometrics provide a higher level of security and authentication than other methods because no two people are exactly alike. Since the Sept. 11 terrorist attacks on the U.S.,

the technology has garnered renewed attention.

Most users until now viewed biometrics as costly and difficult to integrate with legacy applications. That's changing, however, and at least one com-

Biometrics, page 61

WINDOWS XP could increase use of biometric IDs like this fingerprint scan.

DESPITE ECONOMY, H-1B VISA RECORD SET

*Continued reliance on foreign workers
angers many unemployed IT professionals*

BY PATRICK THIBODEAU
WASHINGTON

Despite the steep high-tech industry downturn, the U.S. Immigration and Naturalization Service approved a record number of H-1B visas in the fiscal year ended Sept. 30. But the total was still expected to fall short of the increase approved by Congress last year.

After a tremendous lobbying push by industry groups, Congress raised the controversial cap on H-1B visas, which allow foreign programmers and other skilled workers to take jobs

LABOR DEBATE

in the U.S., to 195,000. That represents its highest-ever level and an increase from the previously approved level of 107,500 visas. By the end of July, the INS had signed off on 138,000 petitions for H-1B visas.

Despite that record number, industry groups say it didn't match the legal limit for the fiscal year. Nonetheless, the sheer number of non-U.S. citizens working in the high-tech sector has angered some.

"The people who have been hired in the past year under

H-1B visas are holding jobs that I can take," said Peter Dalinis, an unemployed programmer in Seattle. "It hurts right now, because I live and was born here."

The H-1B program is one of the most contentious issues facing the IT community. Critics charge that in many instances, foreign workers are being hired because they're willing to work for lower wages and fewer benefits. In-

H-1B Visas, page 61

IT HELPS MANAGE CIPRO DEMAND

*Systems flag hoarding,
check demand and more*

BY BOB BREWIN

Managed health care and pharmacy services providers are turning to their IT systems to manage spikes in demand for the anthrax antibiotic Cipro. Their mammoth rules-based databases help ensure that people receive what they need while guarding against unnecessary stockpiling.

These providers emphasize that they are managing the demand for Cipro no differently than that for any other drug. And they say prescriptions for other, far more common drugs still outpace those for Cipro.

Cipro manufacturer Bayer Corp., a Pittsburgh-based subsidiary of Germany's Bayer AG, didn't respond to repeated requests for comment. But John Maesner, vice president of pharmacy operations at Cigna Health Care, a Bloom-
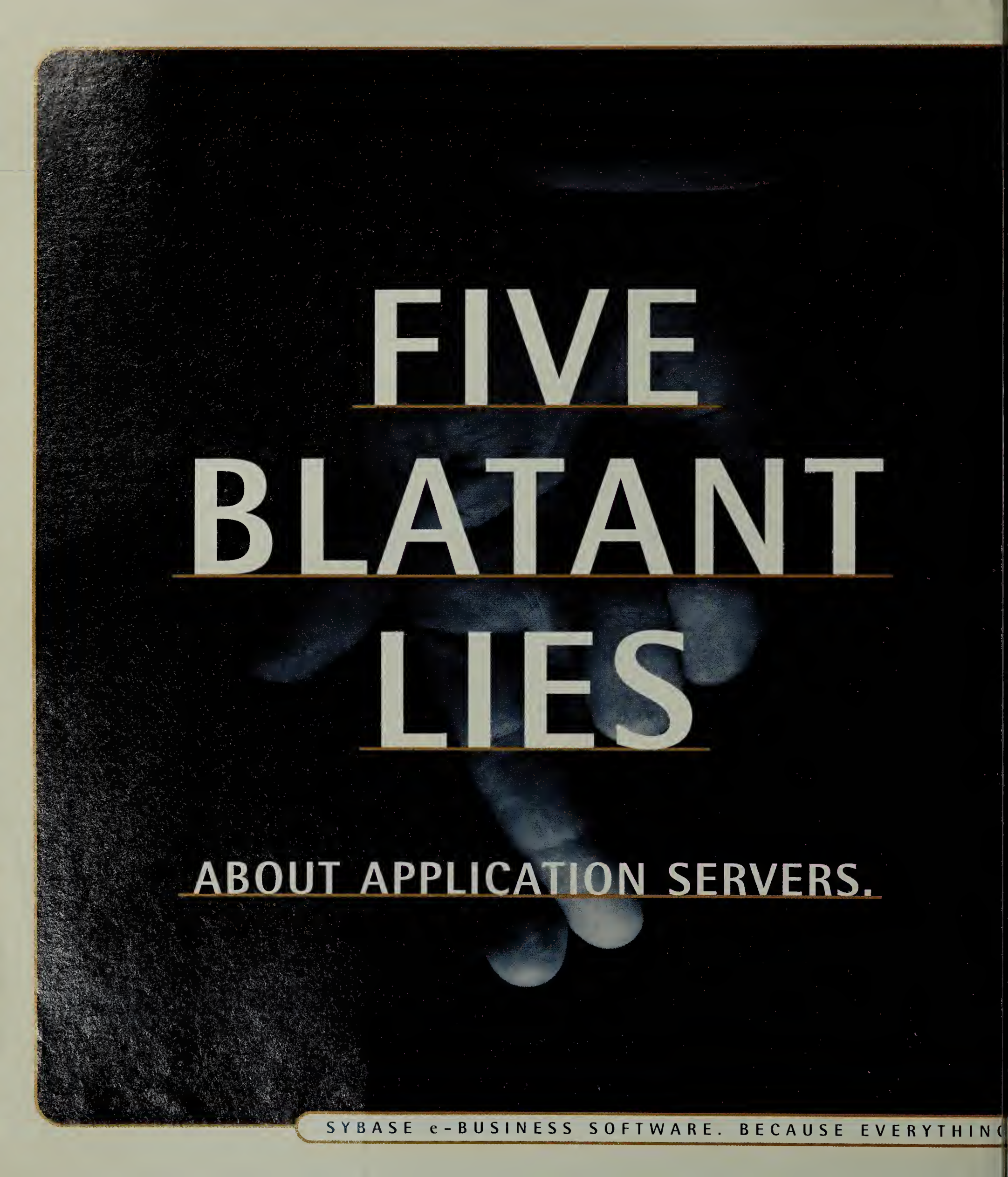
Cipro Demand, page 15

IBM Roils Linux Waters

IBM, the big fish in proprietary data center operating systems, hopes to make a splash with its newfound commitment to Linux and open-source computing for its enterprise customers. Mark Hall looks at what's behind IBM's Linux strategy, whether Big Blue is helping make Linux a more credible alternative as a corporate operating system, and how IBM's plans may put Microsoft and Sun on the defensive.

Story begins on page 42.

COLIN JOHNSON

NEWSPAPER

FIVE BLATANT LIES

ABOUT APPLICATION SERVERS.

Let's start with a little unvarnished truth: We are here to advocate your acceptance of the Sybase Enterprise Application Server 4.0 (affectionately known as EAServer) as the singular de facto standard for your enterprise. This is, after all, our own advertisement.

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We hear this one a lot. We assure you it is pure nonsense. It's akin to being a "little bit pregnant." You are or you aren't. The same is true with standards. It's either/or. Yes or no. Utterly binary.

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Native COM Support	●				
Native C Support	●				
Native C++ Support	●				

JUST BECAUSE IT DOESN'T HAVE A CORD
DOESN'T MEAN IT SHOULDN'T BE PLUGGED IN.

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POOF! YOU'RE A MANAGER

Grizzled IT managers will tell you that there aren't any books out there that can tell you how to do your job. But there are steps that newbie supervisors can take to foster employee career growth, run successful projects and communicate effectively with business peers. **PAGE 24**

JOSEF GAST

HANDS ON

In "The Traveler's Kit Bag, Part 2," *Computerworld*'s reviews editor looks at a few bags and offers some suggestions for making it easier to travel with a computer. **PAGE 46**

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COMPUTERWORLD THIS WEEK

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ONLINE

IBM'S LINUX PUSH

What do you think about IBM's push into Linux? Post your opinions and read what others have to say in our online forum.
www.computerworld.com/q?a1180

OPERATING SYSTEM RESOURCES

For news, features, analysis and discussions about operating systems of all flavors, head to our Operating System Knowledge Center.
www.computerworld.com/q?k1500

CAN YOUR WEB SITE HOLD UP?

The holiday shopping season is right around the corner. Leslie Gaillard at San Mateo, Calif.-based Keynote Systems Inc. outlines how to load-test a Web site.
www.computerworld.com/ecommerce

TERRORISM OR HOOLIGANISM?

A lot of what is being cast as cyberterrorism is really just cyberhooliganism. Readers Bruce Schneier and Elizabeth Zwicky point out what real terrorism will look like and what you might want to consider to prepare for it.
www.computerworld.com/security

.Net Consumer Plan Could Draw Enterprises

Corporate users can test a preview tool kit to build links to Web services

BY CAROL SLIWA
LOS ANGELES

MICROSOFT may be targeting its .Net My Services at consumers, but corporate IT departments may benefit from the new initiative.

Microsoft Corp. last week unveiled an early version of a software tool kit that can be used to build links to the wide range of Web-based services — such as authentication and alert notifications of critical, time-sensitive information — that it plans to make available during the coming year.

Ned Wolf, a software architect at Eastman Kodak Co. in Rochester, N.Y., said the concept of Web services is interesting for companies like his that may want to offer customers a Web-based map locater without having to build the service themselves.

Microsoft's free user-authentication service, called Passport, can ease some of the development burden. "Any authentication I don't build, I don't have to worry about people hacking," Wolf said.

Formerly known by the code name HailStorm, .Net My Services gives users the ability to store a wide range of information, such as a personal profile, contacts, a calendar, an electronic wallet, their physical location and their favorite Web sites. Users can grant individuals or companies permission to access their information in order to ease or customize their Web experience.

For instance, users could let their friends access their personal calendars through the .Net Calendar service to schedule events or meetings.

They could also make purchases over the Internet without having to continually enter their credit card information if electronic retailers link to Microsoft's service that stores that data on users' behalf.

Privacy advocates have decried Microsoft's level of control over personal information. But Microsoft Group Vice President Bob Muglia last week insisted in a keynote address at Microsoft's Professional Developers Conference that the vendor won't rent, sell or market the data, which he claims users will control.

David Smith, an analyst at Stamford, Conn.-based Gartner Inc., predicted that .Net My Services will have limited use within corporations until Microsoft's business-to-business services, code-named Blizzard, are launched. But in the meantime, "businesses do need to care" about .Net My Services as a way to reach consumers, he said.

Based on XML, SOAP

Developers can use the preview version of the .Net My Services software development kit to link to interfaces of Microsoft .Net services through standard protocols and formats such as HTTP, XML and Simple Object Access Protocol.

There are no charges or usage fees for the software development kit. But there will be fees for developers, starting at $1,000 annually and $250 per application for entry-level access to Microsoft's test facility, Muglia said.

Muglia assured developers that Microsoft would make it "very inexpensive" for them. "Developers aren't going to bear the cost," he said. "Devel-oper costs will really be associated with certifying their applications to run in this environment."

One of the crucial pieces of Microsoft's .Net My Services is the process of uniquely and securely identifying, or authenticating, users. In theory, users could sign on just once to gain access to all sites across the entire Internet if their site operators tie into authentication services such as Microsoft's Passport.

Although Microsoft is promoting Passport, Muglia noted that he expects other authentication providers to spring up. He said corporations may elect to host their own authentication systems and establish a trust relationship with Microsoft's Passport system through Kerberos security standards. The connection could be made in a federated fashion, in much the same way that banks now link automated teller machine networks, to create an Internet trust network, Muglia said.

"We see the need for a completely decentralized system where no one company is in control of the user accounts and passwords," he added.

Directory Links

Muglia said Microsoft's new server operating system, Windows .Net Server, which is due out in the first half of next year, will enable Passport federation through Active Directory, which makes use of Kerberos security.

That would pave the way for corporations to host .Net My Services for their employees and manage their own data policies, Muglia said. He added that he can also envision business-to-business uses for Web services.

But Rob Enderle, an analyst at Cambridge, Mass.-based Giga Information Group Inc., said Microsoft may have trouble convincing IT managers to establish a trust relationship with the Passport authentication service, particularly since "Microsoft has itself been hacked into so visibly and often."

"Microsoft is going to own the [Passport] repository, and it's going to be one of the large targets on the Net," Enderle said. "Hackers know it exists, and they're going to try to break into it."

Enderle said a trust relationship means that one site has a gateway into another one. "Often, when security has been breached even on the most secure sites, it's been through a trust relationship," he said. ▶

Developers Are Cost-Cautious With Microsoft Web Services

Users reluctant to adopt new methodology in economic slowdown

BY LEE COPELAND
LOS ANGELES

Corporate and professional programmers who attended Microsoft Corp.'s Professional Developers Conference here last week said they're planning to take a gradual, cost-conscious approach to adopting XML-based Web services, hoping that the development method will aid in integrating disparate back-end systems.

While vendors such as Microsoft and Sun Microsystems Inc. have crafted a slew of tools, platforms and product support for evolving Web service standards such as XML and Simple Object Access Protocol, real-world implementations may reflect an a la carte approach aimed at keeping costs low.

"For the slice that we need out of Microsoft, it's more cost-effective to build our own stuff," said Robin Ramsey, chief architect at ConceroGroup, an online insurance broker in Lake Oswego, Ore.

For instance, ConceroGroup plans to update its applications with Web services to automate insurance-quote delivery and receipt. But instead of using a full slate of Microsoft technologies to help develop services for its customers, the company built its own XML translation engine to reduce costs.

"The grand vision is a bridge too far for a lot of our clients," Ramsey said. "The new economy says [that] before anything else, you must be cost-effective."

"Microsoft is providing the functionality for Web services, but they are also trying to protect their own resources," said Pete Lindstrom, an analyst at Hurwitz Group Inc. in Framingham, Mass. "Right off the bat, companies are looking at disparate systems that pass data back and forth and trying to Web service-ize that."

Microsoft Chairman Bill Gates kicked off the confer-

ence by beating the drum for his company's XML-based Web services. "The XML-type applications will replace the old applications, and they will find a new area where software was not used before," Gates told attendees. He also laid out a product road map that includes Visual Studio .Net tools, which are due to ship by year's end (see chart).

Economic Factors

To get to .Net, Microsoft customers will have to migrate to Visual Studio .Net tools such as C#, Visual J# or Visual Basic .Net and shift to the new .Net operating system.

The problem is, many firms

arc reluctant to implement a new programming methodology in tough economic times.

"Microsoft has a conversion utility, but it's going to be a lot of work to migrate our applications," said Jeff Taylor, a systems architect at Monetaire Inc., a New York-based wealth management firm. "We have less work with our clients right now, and this is a big R&D expenditure, which we'd prefer to cut. All the core components scem a lot different, and it will take at least a year to get our developers on the same page and trained."

Taylor said Monetaire plans to migrate its Visual Basic 6.0 application to Microsoft's C#

to support Web services once the tools are available.

For conference attendees like Paul Houdashell, a programmer analyst at Choice Homes, the shift to Web services is crucial to curbing escalating integration costs.

The Arlington, Texas-based construction firm started developing Web services two years ago with older Microsoft languages and technologies in order to swap data with its partners and customers, Houdashell said. But it's still evaluating whether it needs to shift to the .Net platform to improve those services, he said.

"We're here to see if .Net is something we should move to in the future," Houdashell said. ▶

The .Net Road Map

Highlights of the .Net product road map that Microsoft laid out last week include the following:

PRODUCT	AVAILABILITY
Visual Studio. Net (Developer tools such as C# and Visual J#)	**By year's end**
Windows .Net Server	**2002**
SQL XML 2.0	**Available now**
MS XML 4.0 tool kit	**Available now**
SOAP 2.0 tool kit	**Available now**

Media Retailer Turns to Web Services, Windows XP

Emerging Microsoft technologies will help firm develop enhanced customer services

BY CAROL SLIWA

Many corporate IT professionals are checking out the technology behind Web services, but they're often left searching for a business benefit to propel them to take the plunge.

Trans World Entertainment Corp. was among the companies that had no interest in technology for technology's sake. The Albany, N.Y.-based music and video retailer wanted to establish a single, solid brand and consistent customer experience for its online site and 700 of its brick-and-mortar stores, which include the Strawberries, Coconuts and Record Town chains, said Steven Skiba, the company's chief technology officer.

That business need and a series of technology innovations

and improvements converged during the past year. And last week, Trans World's new chain, FYE — an acronym meaning "For Your Entertainment" — became a prominent poster child for Microsoft's .Net services, Windows XP operating system and Windows media technologies.

"We started to learn more about .Net and its capabilities, and Microsoft started learning more about what we were doing for the consumer," said Skiba.

Before year's end, FYE plans to launch a "smart application" that will allow customers to catalog their music collections, share listings with friends, create wish lists, listen to music samples and view movie trailers. Customers will be able to

access the application from their PCs at home and from any of the 25,000 listening and viewing stations and 1,000 kiosks that will be rolled out next year to FYE retail stores.

Delivered via CD or download, the smart application runs on Windows XP, uses Windows media technologies, integrates Microsoft's instant messaging client and relies on the vendor's Passport system to authenticate users. Data will be sent via XML through the Simple Object Access Protocol.

Customers who opt for a loyalty card, called a Backstage Pass, can get a more personalized experience through links to their history and preferences. An FYE tab on Microsoft's Messenger will let users get recommendations or view top sellers and new releases.

Calculated Risk

Skiba said he didn't worry about taking a risk on nascent technology, "because Microsoft was making such a big investment in it" and his own company was careful in its design work, proof of concept and investment analysis.

"There were a lot of ways to

implement this," Skiba said. "We had to continually test ourselves on the best."

To get this far, Trans World has been laying the groundwork for more than a year. It had to wait for disk storage space to hit a per-gigabyte price that made the content-distribution system affordable, Skiba said. The company also needed a broadband network to deliver audio and video from servers at its home office to in-store kiosks, since the public Internet couldn't be trusted to provide a consistent experience, Skiba said.

Trans World also had to find listening/viewing station hardware with enough processing power to handle rich media content and sufficient staying power to last five years. And it needed a media-rich operating system for PCs and touch-screen-enabled kiosks.

"It is a convergence of all these technologies that makes it work at this point in time," Skiba said. ▶

Quick Link For more Windows XP coverage, visit our Operating Systems Knowledge Center:
www.computerworld.com/q?k1500

TWA to Shed IT Staff

American takeover, Sept. 11 fallout prompt IT layoffs

BY JENNIFER DiSABATINO

TWA AIRLINES LLC is laying off most of its IT staff as a result of the takeover by American Airlines Inc. and the fallout in the travel industry after Sept. 11.

The layoffs come while TWA is switching its reservations system from Worldspan LP in Atlanta to Sabre Holdings Corp. in Fort Worth, Texas. TWA and American are also readying their systems to perform security checks of passengers in their reservation systems against databases from local, state, federal and international agencies of suspected terrorists.

"Eventually, all [TWA] non-contract [IT] management employees will be laid off," said American spokeswoman Julia Bishop-Cross. While she declined to specify how many of those employees there are, she did say that in the past few weeks, 200 people have been laid off. TWA agreed to be bought out by Fort Worth-based American in January. Last month, American announced that it would lay off 3,000 TWA employees and 20,000 workers companywide.

"The majority of IT people being let go now are in training, recruiting and processing purchase orders," Bishop-Cross said. "I can just assure you, no one is being laid off who would affect the cutover to Sabre." That cutover is expected to be completed Dec. 2.

There does appear to be some uncertainty in the IT ranks, however.

"Everyone here is looking at it," said one programmer at St. Louis, Mo.-based TWA, who asked to remain anonymous for fear of jeopardizing the severance pay. The programmer said that initially, American told TWA employees that it didn't plan to cut IT jobs.

But with the drastic slowdown in the travel industry since the Sept. 11 terrorist attacks, "our jobs were the first jobs American Airlines targeted to get rid of ASAP," the programmer said. "Security is the last thing they want to spend money on. It doesn't generate revenue. There's a lot of talent going to the unemployment lines. I see this only getting worse with all the layoffs."

Some analysts, however, said the move was a natural result of the takeover and the terrorist attacks.

"Understand that this is an industry that has had its economic model totally decimated," said Henry Harteveldt, an analyst at Forrester Research Inc. in Cambridge, Mass. "It's obviously not a financially viable possibility right now" to keep all IT staff at TWA. "I'm sure that assurances were given a couple months ago, but we're living in a different world," he added.

The TWA layoffs won't likely affect the cutover either, according to Richard Eastman, president of The Eastman Group, an airline IT consulting firm in Newport Beach, Calif.

"Even though TWA is switching to Sabre, that is not an overly complex transition," Eastman said. "And it can more than adequately be handled by the internal wherewithal that American Airlines has in place, given that American built and ran Sabre. It makes economic and strategic sense to keep the people at American and Sabre."

Culture Shift

Pending changes in airline IT to improve security and to move to open systems, like the one Sabre is moving to over the next four years, are going to require some fundamental changes in the culture of the airline industry, Eastman said. "That won't be hindered or helped by the ongoing staffing of the TWA folks," he said.

Moving on to a new job where more current technology skills are used may be a bonus, since many of the TWA IT employees are programmers for the Transaction Processing Facility (TPF) code developed 40 years ago by IBM.

"A reality check kind of suggests that the TWA and American employees, they're going to require skills that the current people don't have," Eastman said, noting that the airlines are incrementally moving off the TPF and onto open systems.

"Open systems are clearly something that airlines are going to pursue," said Harteveldt. "American has always had a strong technology legacy, especially if it helps lower costs." ▶

Sabre CTO Says Mainframe Can Handle Security Checks

Craig Murphy, chief technology officer at Sabre Holdings Corp. in Fort Worth, Texas, spoke with *Computerworld*'s Jennifer DiSabatino last week about the impact of new security measures on his company, which runs reservations systems for many airlines. Murphy also discussed the planned switch of Sabre's reservations databases from mainframes to Compaq Computer Corp.'s NonStop Himalaya servers.

Q: In the wake of the Sept. 11 attacks, the U.S. Department of Transportation is recommending that airlines start performing such functions as flagging the names of suspected terrorists in their reservations systems. What kind of impact would that have on Sabre's mainframe-based systems?
A: Obviously, we're working on stuff as a result of what has happened. For reasons of national and corporate security, we can't really go into it. It impacts our software, but it won't impact the responsiveness of our software in any unintended way. Compared with enumerating a few billion fares, it doesn't have complexity. There's certainly a positive incremental load, but it's mostly negligible, in terms of its impact on the computer. It's certainly not negligible in terms of its affect on airline operations.

Q: Could too many queries cause the system to seize up?
A: There is a capacity limit to the Sabre core [system]. But when the actual demands on our system exceed its capacity, it doesn't seize. We have a long-standing operational process that will go into a prioritized, partial shutdown and continue to process at or near the capacity of the system in a way that's intended to be very fair. There are a certain number of users that will never be disconnected unless there is an unplanned outage, which is a very rare event. The airports are must-complete [users].

Q: Will the move of the reservation databases to NonStop Himalaya servers help with these checks?
A: Not immediately. It's another case where Himalaya technology will help in terms of quicker responsiveness through higher-level programming, more standards and better cost of ownership. But our Himalaya project

> There's an underlying assumption here that our system is crippled. [It] is not crippled.
>
> **CRAIG MURPHY, CTO, SABRE HOLDINGS CORP.**

is about shopping and pricing and fares. It's not about check-in at the airport. We're only doing shopping [on those systems]. Ticketing and check-in remains on the [mainframe].

There's an underlying assumption here that our system is crippled. Our system is not crippled. Our system is a very effective system. Let's speak to the limitations of [IBM's Transaction Processing Facility software]. It's a lower-level programming model. It's a lower-level file system. That's not inherently limiting. It's an efficiency issue, not an effectiveness issue. . . . And we believe that what we have today is very effective, and the efficiency issue is really secondary to our business model.

We're replacing [Transaction Processing Facility] because we have both the open-system characteristics and the reliability, operability and scalability [features with the Himalaya servers]. We're doing it right where we need the reliability and the scalability. Assuming what we're working on works, we would consider [doing] it for the booking and fulfillment systems. But that's betting on the future.

Q: Are you making other IT-related changes that could help track passengers?
A: We're working to move [customer] profiles to open-systems technology. [A new customer relationship management] system is intended to replace activity-oriented access with customer-oriented access. The intention of our program is to link together all profiles, all bookings, all electronic tickets, loyalty programs, credit references — all kinds of stuff that's associated with a customer. To be clear, that's the intention. The first phase won't do all that. ▶

BRIEFS

Sun Tying iPlanet App Server to Solaris

Sun Microsystems Inc. disclosed plans to start bundling its iPlanet Application Server software with the Solaris operating system. A development version of the application server was included with a Solaris upgrade announced last week. Sun said the full iPlanet software is due to be integrated with the operating system next year.

Compaq Expands Line Of Notebook PCs

Compaq Computer Corp. added two new models to its Evo line of notebook PCs for business users, with prices starting at $1,399. But Compaq said it has postponed shipment of a Pocket PC 2002 upgrade for its iPaq handhelds until next week at the earliest, saying it needs to do more testing related to the new handheld operating system released this month by Microsoft Corp.

Shell Picks BMC for Data Center Project

Royal Dutch/Shell Group of Companies said it plans to use systems management software developed by Houston-based BMC Software Inc. to monitor three new data center hubs that are being set up in different parts of the world. Netherlands-based Shell didn't disclose the value of the deal, which follows a $100 million hardware contract that was awarded to IBM in June.

Short Takes

Redmond, Wash.-based AT&T WIRELESS SERVICES INC. said its fixed wireless services business is being phased out after the unit failed to meet its financial targets in the third quarter. . . . Tokyo-based FUJITSU INC. reported a $1.5 billion loss for the first half of its fiscal year and said it plans to cut an additional 4,600 workers because of lower-than-expected sales.

States Look to Have Say in Microsoft Case

Their new lawyer could take case beyond any Bush administration remedy plan

BY PATRICK THIBODEAU
WASHINGTON

IN THE SUREST SIGN yet that Microsoft Corp.'s antitrust opponents are split on a remedy against the company, the 18 states involved in the case picked a high-powered attorney last week to represent them, a move that came just one week before this Friday's court-ordered settlement deadline. By hiring their own attorney, the states in effect are telling the Bush administration that they're prepared to challenge any remedy agreement that doesn't have their backing.

Representing the states in the next phase of the case is Brendan Sullivan, a prominent Washington attorney with a reputation as a tenacious litigator. Sullivan defended Oliver North in the Iran-contra trial.

"If [the states] want to hire somebody that visible, it must mean they want to drive a hard bargain or they want to pursue their own litigation down the road," said Robert Litan, a former deputy assistant attorney general in the U.S. Department of Justice's (DOJ) antitrust division. The decision means the states are "in for the long haul," said Litan, who now works at The Brookings Institution in Washington.

When the DOJ last month dropped plans to seek Microsoft's breakup, it fueled suspicion that the Bush administration wasn't interested in a tough settlement. Indeed, the attorneys general of New York and California warned DOJ officials of the need for a "forward-looking" remedy — one that would possibly address Windows XP and future operating systems.

If a settlement isn't reached by Friday — and there are no signs that one is possible by then — the government will have just over a month to produce a remedy recommendation to U.S. District Court Judge Colleen Kollar-Kotelly.

"If anything, this may make it more difficult for the parties to reach some middle ground," said Hillard Sterling, an antitrust attorney at Gordon & Glickson PC in Chicago.

But Ed Black, CEO of the Washington-based Computer & Communications Industry Association, said he sees it as a hopeful sign that the states want "an effective remedy."

In a related development, plans by the U.S. Senate Judiciary Committee to hold a series of hearings on competitive issues related to the Internet and Windows XP were postponed but not abandoned. ▶

Oracle Gives Users More Time on Aging Applications

Extension falls short of two-year request

BY MARC L. SONGINI

Responding to a request from more than 50 users, Oracle Corp. last week extended technical support of a widely installed business application release for the second time in five months. But the new extension doesn't go as far as the users hoped it would.

Oracle said it will continue to support its legacy Release 10.7 application suite until mid-2003 — six months later than the previous end-of-2002 cutoff date, which was set in June. The software vendor initially wanted to stop supporting Release 10.7 last December, but it has announced a series of extensions since late 1999, after users complained that they weren't ready to upgrade to newer application releases.

Jeremy Young, president of the independent Oracle Applications Users Group (OAUG) in Atlanta, said the latest extension "is a very obvious step in the right direction in terms of working with us and dealing with OAUG concerns."

But Oracle officials "can always do more in terms of listening to the user concerns that the OAUG is putting before them," added Young, who is a finance business process manager at Brussels-based DHL Worldwide Network NV.

In fact, the six-month extension is much shorter than the two years of additional support requested by a group of Release 10.7 users in a petition submitted to Oracle three months ago by the OAUG's Customer Support Council.

The users said then that they wanted to put off the cost of upgrading to Oracle's E-Business Suite 11i applications. Migrating to the Web-based 11i software is a big undertaking for the many companies that currently use Release 10.7 in green-screen terminal-emulation mode.

Last week's extension is "a goodwill gesture between ourselves and our users," according to Mark Jarvis, chief marketing officer at Oracle. Jarvis said he believes that six more months of support should be adequate for users who have been delaying upgrades to 11i.

But it would have been "ideal" to at least get until the end of 2003 to complete 11i upgrades, said John Holdeman, plant IT manager at Borg-Warner Cooling Systems in Marshall, Mich. The Chicago-based BorgWarner Inc. unit, which makes engine-cooling devices, runs Release 10.7 now and doesn't expect to launch an 11i project until next fall, according to Holdeman.

This may not be the last time users ask for more breathing room from Oracle, though. Given the changes in the business climate following the Sept. 11 terrorist attacks, Holdeman said he "wouldn't be surprised if we saw another round of pressure" put on the company for a further Release 10.7 support extension.

"With the current economic uncertainty, staying put is a good strategy for a lot of customers," said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif. ▶

OAUG'S YOUNG: The extension is a step in the right direction for Oracle.

Quick Link

Oracle and the OAUG have yet to agree on plans for a joint user conference:
www.computerworld.com/q?24493

NEWS

Telecoms Push to Revive Hosted Data Storage Model

Users see potential benefits for data backup applications

BY LUCAS MEARIAN

SEVERAL telecommunications giants are trying to revive the hosted storage service provider (SSP) business model that largely failed last year along with the dot-coms that constituted its biggest users. BellSouth Corp., AT&T Corp. and Qwest Communications International Inc. have either already started or plan to soon begin to host customers' data storage as part of bundled offerings.

Some IT managers and industry analysts said the telecommunications firms are more likely to find success in selling data storage as a utility than the start-up SSPs that once fostered the approach. They cited the companies' large, loyal customer bases and existing technology infrastructures.

The potential advantage for IT managers would be cheap, quick storage for backup and disaster recovery.

"SSPs never had the economies of scale down to where they could offer low prices. The advantage is that [the telecoms] can do this in hopefully high volume and offer the service at a fairly low price," said Doug Chandler, an analyst at research firm IDC in Framingham, Mass. "If there's one thing telcos know, it's offering services as a utility. And because of that, they can use the same pricing model."

But many users are wary about placing the security of their information in a third party's hands — telecommunications firm or otherwise.

"We generally like to control our own domain," said Steve Randich, CIO at Nasdaq Stock Market Inc. in Washington. "All things being equal, third parties will lose to hosting it in-house."

Alex Gurvich, an assistant vice president in the technology group at GE Equity Inc. in Stamford, Conn., said telecommunications firms are a natural for hosting storage but will only find success in performing backups rather than in safekeeping mission-critical data.

"Primary storage people still are not comfortable with that," Gurvich said. "On the backup side, however, it's, 'Holy smokes, someone take my pain away.'"

BellSouth announced earlier this month that it will leverage its more than 3.6 million miles of fiber-optic cable and two enormous data centers in adding three lines of business: voice-enabled applications, Gigabit Ethernet connectivity and managed data storage.

Deals in the Works

Atlanta-based BellSouth said that it's initially partnering with two companies: Waltham, Mass.-based SSP StorageNetworks Inc. and voice platform and software vendor BeVocal Inc. in Sunnyvale, Calif.

BellSouth's move follows a similar one by AT&T.

In August, AT&T entered a partnership with Hopkinton, Mass.-based EMC Corp. to provide what it calls Ultravailable Data Storage, which allows companies to start with as little as 100GB of managed storage and increase it as needed in 50GB increments. The service can also be customized for large data-centric enterprises such as banks, financial services firms and government agencies.

Storability Inc., meanwhile, this month announced a package of software, training and services that lets telecommunications firms and other companies deliver storage services to their customers. The Southboro, Mass.-based SSP said it also expects to announce a deal with Denver-based Qwest, which will use its software to offer storage over its 115,000-mile-long broadband Internet communications network.

Donna Lee, chief marketing officer at BellSouth, said that in her company's initial launch, service-level agreements (SLA) would basically mirror what's currently offered with broadband network service and tie into storage availability and backup times.

But for some users, SLAs are no assurance that telecommunication firms can deliver the goods they promise.

"If it's similar in any way to how my [Digital Subscriber Lines] got configured, I don't think so," said Rick Bauer, a technology adviser to public schools nationwide and CIO at The Hill School in Pottstown, Pa. "That was a five-month process." ▶

Quick Link To access additional resources online, visit our Storage Knowledge Center: www.computerworld.com/q?k1700

Users Struggle to Improve IT Security, Add Storage Technology With Less Money

Funding was cut for new purchases, say conference attendees

BY LUCAS MEARIAN
ORLANDO

In the aftermath of last month's terrorist attacks, IT managers at *Computerworld*'s Storage Networking World conference here said they're struggling to fit additional security and storage technologies into ever-shrinking IT budgets.

As part of their efforts to do more with less, participants in a conference panel discussion said they would be willing to outsource some of their security activities in light of the tight economy. Still, they urged attendees to scrutinize service-level agreements with third-party providers to ensure that their companies actually get what's being sold to them.

"You have to look at the depth of their staff and get a commitment that the team you're being presented with is the team that's going to support you," said Brian Cobb, director of systems engineering at Reston, Va.-based Sallie Mae Inc.

However, the ability to purchase even the most basic tools has become difficult with the extreme belt-tightening occurring in IT shops.

Rowland Ellison, a senior technical specialist at one of Memphis-based FedEx Corp.'s data centers, patrolled the conference exhibit floor seeking the latest storage technologies — even though he knew he couldn't buy them. Ellison said his executive management has told him that to avoid further layoffs, he must make use of the company's existing IT infrastructure.

Diane McPadden, a systems administrator at Harris Corp.

in Melbourne, Fla., said she had been planning to put together a Fibre Channel storage-area network but is now being forced to delegate half of her company's storage needs to less-expensive network-attached storage. "We're hurting for disk space and management tools," she said.

The lack of robust storage management tools on the market was a common cry among the roughly 1,400 conference attendees. Many IT managers said that rather than tools that merely allow them to monitor networks, they need software that will let them allocate storage and automatically balance workloads among systems.

McPadden said that if she were able to track storage use, she could make chargebacks to various departments at her company.

"Vendors have come a long way, but they still have a ways to go," she said. ▶

Storage Wish List

IT managers want storage technology vendors to provide the following things:

▶ **Seamless interoperability** between storage devices and software (such as JBOD, RAID, mainframes, servers and CRM/ERP apps)

▶ **Storage software** that maps networks down to the disk

▶ **Storage management** software that tracks storage use for chargebacks to business departments and automates systems for load balancing

▶ **Storage virtualization** software that pools storage from various disk arrays

Quick Link To learn more about the threat of customer data hijacking, visit our Web site: www.computerworld.com/q?24523

Software quality	↑	**80%**
Developer productivity	↑	**300%**
ROI	↑	**1400%**
Testing time	↓	**95%**
Development cycle	↓	**66%**
Lump in throat	↓	**100%**

Lies, damn lies and statistics, you say? Some of our customers used to be cynical, too. Before they were customers. But then they started sending us these numbers. Telling us that the results of using our best practices, integrated tools and services exceeded their expectations. Cutting test time, decreasing development cycles and reducing bugs. Freeing their teams from the obstacles that hinder software development. Need more evidence? There's plenty available at www.rational.com/customersuccess2.

be liberated

Anthrax Prompts Shift In Feds' E-Mail Policy

But so far, companies aren't following suit

BY JENNIFER DISABATINO

DESPITE A PLAGUE of anthrax in the U.S. postal system and a shift in favor of e-mail in government communications policies, many companies don't plan to mandate the use of e-mail over paper mail in order to mitigate terrorist attacks through the post office.

William Keslar, a spokesman for USX Corp. in Pittsburgh, said his company has no plans to move to e-mail.

"But if we did, our IT people told us that we have the capacity and storage space to handle a 30% increase," he said.

However, companies doing business with the government are preparing for a policy shift.

"We have seen a tremendous increase in terms of the interest we are getting here," said Krish Krishnan, CEO of Net-Compliance Inc. in Washington. NetCompliance manufactures software to help companies comply with governmental guidelines on filing documents electronically.

An advisory from the U.S. Department of Transportation (DOT) dated Oct. 19 stated, "Mail delivery was temporarily halted in the DOT headquarters building, including deliveries for the filing of documents in DOT dockets. ... Those persons making filings in DOT dockets are encouraged to file electronically by using the DOT DMS Web site."

Companies may even have to set aside e-mail policies that limit or prohibit attachments.

"Companies are trying to comply with the government requirements as quickly and efficiently as they can," Krishnan said, "and if that means they don't adhere to their in-house policy, so be it."

An increase in electronic communications between private companies and the government may lead to security problems, said Satish Ramachandran, CEO and president of Mirapoint Inc. in Sunnyvale, Calif.

As companies bolster their infrastructure to handle the increased load of e-mail and attachments, "they leave the doors open for hacker and virus attackers," he said.

One company that had temporarily banned hard-copy mail will begin accepting it again. Jane Amari, editor and publisher of the *Arizona Daily Star* in Tucson, said the newspaper had refused to accept letters to the editor via surface mail for the past two weeks, telling readers to use e-mail or send faxes instead.

"We did it until we got the gear, masks and rubber gloves, to open the mail," she said. "We should be accepting regular mail again this week. But 80% of our letters to the editor already come via e-mail." ▶

Reporter Linda Rosencrance contributed to this report.

UPS, FedEx: No Increase in Business

Neither United Parcel Service Inc. nor FedEx Corp. is reporting a surge in business because of the anthrax being sent through the U.S. Postal Service.

Steve Holmes, a spokesman for Atlanta-based UPS, said volume has been down since the Sept. 11 terrorist attacks and still hasn't reached preattack levels.

But Holmes said he couldn't make any connection between the volume of UPS's business and the anthrax-by-mail scare.

Sally Davenport, Holmes' counterpart at Memphis-based FedEx, said the company can't attribute any change in the number of packages or documents it handles to the anthrax scare.

"It's hard to determine because our volume fluctuates every day," Davenport said.

For its part, the Postal Service is adopting and deploying new technology to neutralize anthrax that might be sent through the mail. According to information at its Web site, *www.usps.com*, the Postal Service is purchasing irradiation equipment designed to kill biological agents, like anthrax, in the mail. The Postal Service said the equipment will be installed in targeted areas and built into the sorting process, but it wouldn't discuss the equipment in detail.

– Linda Rosencrance

Antilaundering System Offers USPS Real-Time Intelligence

Uncovers suspicious activity, notifies law enforcement

BY DAN VERTON
WASHINGTON

The U.S. Postal Service (USPS) has put a new system in place to help it crack down on terrorists' illicit money flow.

The Bank Secrecy Act and Anti-Money Laundering Compliance System, developed by the USPS and New York-based Information Builders Inc., is poised to become the de facto standard in suspicious-activity reporting throughout the government and the financial services industry.

Although the system isn't being used yet, USPS officials said it's ready to be put into action once Congress and other regulatory agencies finalize new regulations on reporting procedures.

Officials from the Department of Justice and the Department of the Treasury have also expressed interest in using the system.

Passed in 1970, the Bank Secrecy Act (BSA) lays out detailed reporting and record-keeping requirements for banks and other financial institutions.

Undersecretary of the Treasury Jimmy Gurulé, who oversees the Financial Crimes Enforcement Network, which is the agency responsible for enforcing reporting procedures at financial institutions, said new regulations governing the types of reports required will be issued by next March. Gurulé made that comment at last week's 13th annual Money Laundering Enforcement Seminar in Arlington, Va., which was sponsored by the American Bankers Association and the American Bar Association.

The Information Builders system ferrets out patterns that may indicate money-laundering activity and uses sophisticated drill-down, querying and reporting functions to deliver to law enforcement officials the intelligence they need to identify individuals who may be funneling money to terrorists, said officials familiar with the project.

Tracking Money Orders

It isn't a widely known fact, but the USPS currently controls 30% of the money-order market in the U.S., issuing the same type of money orders that were used by some of the terrorists who took part in the Sept. 11 attacks linked to Osama bin Laden's al-Qaeda terrorist organization. The USPS also sells other financial services, such as funds transfers and stored value cards, that will be tracked by the system once the new reporting regulations are in place, said Henry Gibson, the BSA compliance manager at the USPS.

"We can identify suspicious money orders at the point of sale, track those orders through the banking system and identify accounts through which they've passed, even after they've been deposited," said Al Gillum, a former postal inspector who now serves as an independent consultant on the system. "If the regulations had been out, and had the terrorists used USPS money orders, there's a good chance we would have identified them."

Designed in 1996 for use on a mainframe, the system is being ported to a Web-based interface to improve ease of use, according to Larry Reagan, director of Information Builders' Federal Systems Group in Washington. Depending on which agencies adopt the system, it could be used to ferret out not only terrorists who are engaged in money-laundering schemes, but also corrupt investment bankers, drug dealers and others.

More than 900 software programs support the system, and all can be reused with little or no changes required, said Reagan. Several other systems that collect data have been integrated with the system, though Reagan declined to name them for security reasons.

"The whole purpose of all this reporting is to support law enforcement," said Gillum. "We built the system to get data out of the system in a meaningful way." ▶

DOD Urging IT Contractors to Keep Quiet

Cites concern for military security

BY DAN VERTON
WASHINGTON

Since the Sept. 11 terrorist attacks and the subsequent deployment of military forces to Afghanistan, the Pentagon has submitted emergency orders for various types of equipment, including communications gear, and has moved up delivery dates for previous contracts that had already been negotiated, *Computerworld* has learned.

However, the U.S. Department of Defense's need for increased secrecy to protect the lives of military personnel has raised new questions about how much information contractors should release to the public about sensitive government programs, especially IT-related programs that could enable terrorists to target U.S. operations.

Loose Lips

Several press statements issued by companies have raised the ire of some in the defense establishment. For example, within a week of the attacks last month, Carlsbad, Calif.-based Holocom Networks posted a release on its Web site stating that the Pentagon placed an emergency order for 1,000 secure desktop communications enclosures.

Cryptek Secure Communications LLC in Sterling, Va., issued a statement that the Army had stepped up its delivery date for 1,400 of the company's secure battlefield fax machines. And Redwood City, Calif.-based BroadVision Inc. issued a press release on Oct. 24 detailing the Air Force's plans to consolidate hundreds of databases into a single portal that will hold everything from "personnel data to front-line combat intelligence."

As a result of these and other statements, Pentagon officials have issued a series of memos

sent to private industry contractors urging them to think twice about the information they release to the public and post on their Web sites.

"I would also like to stress, during this national emergency, the importance of the use of discretion in all the public statements, press releases and communications made by your respective companies and by your major suppliers," wrote E.C. "Pete" Aldridge Jr., undersecretary of Defense for acquisition, technology and logistics, in an Oct. 2 letter to businesses. "Statistical, production, contracting and delivery information can convey a tremendous amount of information that hostile intelligence organizations might find relevant."

Air Force and Navy acquisition chiefs quickly followed suit. And in an e-mail sent on Oct. 4 to 10 senior officials in the Air Force, Darleen Druyan, the deputy assistant secretary of the Air Force for acquisition and management, went one

step further and prohibited Air Force acquisition officials to speak to the media.

"Effective immediately, I do not want anyone within the Air Force acquisition community discussing any of our programs with the media [on or off the record]," wrote Druyan. "This includes presenting program briefings in any forums at which the media may be present."

BroadVision declined to comment. A spokesman for Robert Frye, executive director of the Air Force's Standard Systems Group in Montgomery, Ala., which manages the Broad-Vision contract, said Frye was unaware of any directive barring his command from talking to the press.

Tom Mitchell, a connectivity specialist at Holocom who worked on the Pentagon project, said he has heard rumblings about other press articles but nothing about Holocom's announcement. He said there was nothing sensitive in Holocom's announcement.

Cryptek Vice President John Garber said his company has "highly restrictive" policies against disclosing classified information. "If I had something to tell you that I thought you shouldn't write about, I wouldn't tell you," he said.

Kevin Clarke, a spokesman for Plano, Texas-based Electronic Data Systems Corp.'s Navy/Marine Corps Intranet (N/MCI) Strike Force, said EDS already adheres to strict government policies regarding information disclosure. The com-

pany recently reviewed all of its public Web sites and issued a companywide memorandum reminding employees not to discuss sensitive information in e-mails and telephone conversations. The $6.9 billion N/MCI contract is the largest outsourcing contract in government.

Bill Crowell, CEO of Cylink Corp. in Santa Clara, Calif., said it's up to the government to hold the private sector accountable. "If I violate the public release provisions of my commercial contracts, then I lose their business," he said. "The government should expect no less."

Steven Aftergood, director of the Project on Government Secrecy at the Federation of American Scientists in Washington, however, worried that concerns about the need for military secrecy could spill over into other areas.

"One wants to be sure that terrorism is not used as a pretext for withholding information that the public needs to assess government policy and performance," he said. "It looks to me like the government is overreaching in some cases." ▶

DONALD RUMSFELD and other Pentagon officials are worried about possible information leaks.

Cipro Demand

field, Conn.-based unit of Cigna Corp., said the number of prescriptions for Cipro, even with the anthrax scare, "is not even in the same league" as the demand for allergy drugs.

Maesner did confirm, however, that Cigna Health is using its rules-based systems to carefully monitor demand for the drug. Rules-based systems allow user-defined parameters to be built into the system, enabling end users to perform specific functions.

Those systems flag transactions "that might be inappropriate, such as stockpiling Cipro," Maesner said. He explained that when a customer presents a prescription for fulfillment at a brick-and-mortar or online pharmacy, the rules databases first check simple things such as eligibility and

the qualifications of the person who wrote the prescription.

Built-in logic and rules also compare the dosage prescribed against U.S. Food and Drug Administration guidelines for the maximum dosage for that drug. It also performs a check of other drugs a person may be taking to ensure that there are no dangerous interactions, Maesner said. Cigna Health was unable to provide more technical details about the system before deadline.

Merck-Medco, the Franklin Lakes, N.J.-based pharmacy benefits management unit of Merck & Co., has entered into its rules database the guidelines from the Centers for Disease Control and Prevention that describe the use of Cipro to treat anthrax, according to spokeswoman Anita Kawatra.

Merck-Medco has used its system to track spikes in Cipro prescriptions over the past month, with volume doubling to 18,000 per day on Oct. 12.

Prescription for Success

Merckmedco.com provides pharmacy services that benefit 65 million Americans. The online pharmacy operation:

- Has filled $1 billion worth of prescriptions since its launch in October 1998.
- Currently processes more than 160,000 prescriptions per week and has filled more than 10 million since its launch.
- Operates 12 online pharmacy fulfillment centers, which use robotic systems to fill bottles and bar code scanners to track prescriptions and paperwork.
- Plans to open its 13th and largest fulfillment center Nov. 12. It will have the capacity to fill 700,000 prescriptions per week.

Merck-Medco had no problem handling this jump in volume, Kawatra added, since its Web site handles 160,000 prescriptions per week through 12 fulfillment pharmacies the company operates.

Kawatra declined to provide any details of the Merck-Medco IT systems, saying they provide the company with a competitive advantage it doesn't want to jeopardize.

Mike Davis, an analyst at Gartner Inc. in Stamford,

Conn., said he wasn't surprised that Merck-Medco declined to detail its system architecture, since that would provide an insight into how much it cost and whether the company has achieved a payback. Davis said it would be "exceptional" if Merck-Medco has started to reap the financial benefits from its online system. But he added that in the health care field, "every company is going to have to go that way if they want to survive." ▶

Dell to Resell EMC's Midrange Storage Line

Dell Computer Corp. and EMC Corp. signed a five-year agreement under which Dell will resell EMC's midrange Clariion disk arrays. The two companies said they also plan to jointly sell Hopkinton, Mass.-based EMC's high-end Symmetrix storage devices to Dell users and explore the idea of having Dell handle some Clariion procurement and production work.

Sun, AOL Team on Web Portal Software

Sun Microsystems Inc. and AOL Time Warner Inc. said they plan to work together on several Internet-based software projects, including the development of Web portals aimed at corporate users. Sun and New York-based AOL Time Warner also plan to make their instant messaging systems interoperable.

IBM, ADP Sign Sale, IT Outsourcing Deal

IBM's Global Services unit sold an operation that handles the printing and distribution of corporate financial statements to Roseland, N.J.-based Automatic Data Processing Inc. (ADP). The deal also includes an IT outsourcing arrangement under which ADP will use IBM's data infrastructure. The sale price and outsourcing terms weren't disclosed.

Short Takes

NORTEL NETWORKS CORP. and IBM announced plans to bundle IBM's WebSphere application server software and DB2 database with Brampton, Ontario-based Nortel's call center and voice-over-IP technology. . . . A Belgian court rejected a new request for bankruptcy protection by LERNOUT & HAUSPIE SPEECH PRODUCTS NV and appointed five liquidators to sell off the leper, Belgium-based software vendor's assets.

Fight Intensifies for Comdisco's Disaster Recovery Services Unit

Bankruptcy judge delays hearing on sale after DOJ files antitrust suit

BY JAIKUMAR VIJAYAN
AND LINDA ROSENCRANCE

A U.S. BANKRUPTCY Court judge last week put off a decision on the proposed sale of Comdisco Inc.'s disaster recovery services business amid an escalating battle for control of the unit involving SunGard Data Systems Inc., Hewlett-Packard Co. and the U.S. Department of Justice (DOJ).

The judge's move capped a series of rapidly unfolding events that began last Monday when the DOJ filed a civil suit seeking to block an $825 million deal between SunGard and Comdisco, on antitrust grounds. The DOJ claimed that the agreement, announced earlier this month, would likely result in higher prices and lower-quality services for users because SunGard and Comdisco are two of the three major disaster recovery vendors.

Just two days later, HP — which initially had agreed to buy the Availability Solutions unit for $610 million (see time line) — submitted a new $750 million bid and said it had been accepted by Comdisco's board of directors and the Rosemont, Ill.-based company's creditors.

But Comdisco, which filed for bankruptcy protection in July, wouldn't comment on whether its board had, in fact, approved the new HP offer. A Comdisco spokeswoman said only that the company had asked the judge overseeing the bankruptcy proceedings to postpone a hearing on the sale until Nov. 7 "so we could study these new developments."

Meanwhile, Wayne, Pa.-based Sungard dismissed the DOJ's antitrust claims as "absurd" and said its offer is still supported by a committee representing Comdisco's major stockholders. SunGard added that it might increase its bid prior to the Nov. 7 hearing.

Comdisco, SunGard and top vendor IBM have a combined total of more than 80% of the disaster recovery market, according to San Jose-based Dataquest Inc. Buying Comdisco's operation would put SunGard firmly in second place behind IBM, said Gartner analyst Tony Adams.

Market Drivers

David Tapper, an analyst at IDC in Framingham, Mass., said he believes the dueling bids by SunGard and HP are being driven in part by the Sept. 11 terrorist attacks, which drew increased attention to the disaster recovery business. Another factor, he said, is a growing business need for services firms to be able to support "always-on" IT infrastructures.

For SunGard, Tapper said, buying the Comdisco unit could expand its reach into the global disaster recovery market and complement an ongoing expansion by the company into managed hosting and high-availability services.

But it's unlikely that SunGard would be able to use its enhanced market position to unfair advantage, Adams said. Despite the dominance of the top vendors, competition for disaster recovery services is still fairly robust, he noted.

Many large companies also build their own IT disaster recovery and business continuity capabilities, Adams added. ▶

Quick Link Read additional comments about last week's developments online:
www.computerworld.com/q?24478

SNAPSHOT

A Downbeat Quarter

Many technology vendors felt the effects of both the sluggish economy and the fallout from the Sept. 11 terrorist attacks during the quarter ended Sept. 30. The following companies last week reported their financial results for the quarter:

VENDOR	REVENUE Q3 2001	REVENUE Q3 2000	PROFIT (LOSS) Q3 2001	PROFIT (LOSS) Q3 2000
Ariba Inc.	$62.6M	$134.9M	($224.3M)	($1.1M)
AT&T Corp.	$13.1B	$14.2B	($2.2B)*	$1.3B*
AT&T Wireless Services Inc.	$3.5B	$2.8B	$77M	$21M
Avaya Inc.	$1.4B	$2B	($328M)	($543M)
BroadVision Inc.	$51.2M	$120.2M	($429.4M)	($52.8M)
Compaq Computer Corp.	$7.5B	$11.2B	($499M)	$557M
Electronic Data Systems Corp.	$5.6B	$4.8B	$212M	$279M
Lucent Technologies Inc.	$5.2B	$7.2B	($8.8B)	($484M)
Silicon Graphics Inc.	$379.4M	$426.3M	($69.6M)	($49M)
Storage Technology Corp.	$498M	$486.6M	$17.9M	$6.3M
Sybase Inc.	$226.3M	$239.1M	($7.1M)	$16.5M
WebMethods Inc.	$40.7M	$45.7M	($33.2M)	($51.2M)

* From continuing operations

White Paper

October 29, 2001

IDC
Analyze the Future

The Evolution of Web Hosting

As e-business merges into the corporate mainstream, enterprises seek more robust management capabilities from hosting service providers

COMPUTERWORLD
CUSTOM PUBLISHING

The Evolution of Web Hosting

As e-business merges into the corporate mainstream, enterprises seek more robust management capabilities from hosting service providers

There's no question that Web hosting is a core component of e-business. In fact, in many respects, hosting is the very platform, or foundation, of e-business; without Web hosts, there would be no World Wide Web, which is now the leading Internet service and the one through which users access other Internet-based services and applications.

By Melanie Posey, Program Manager of Web Hosting Services, and Courtney Munroe, VP of Telecom & IP Services
IDC

Just a few years ago, Web hosting involved a simple, static Web site on a single dedicated or shared server. Today, complex Web implementations typically comprise multiple clustered servers that support several applications or business processes — and often draw on resources hosted in other locations. The evolution is clear: Web hosting, once a minor add-on to the Internet access business, has become central to e-business.

Beginnings

In the early days, the Internet served primarily as a communications platform that connected end users (via email and electronic bulletin boards) and computers (through file transfer). The Web browser facilitated the development of the World Wide Web and the emergence of Web sites. During the mid- to late 1990s, the Internet (via public-facing Web sites) provided companies with an effective channel for information distribution, marketing, and business-to-consumer sales.

However, as Internet technologies mature, enterprises are devising new ways to leverage the Web. In the emerging phase of market development, the Internet is taking its place as a platform for a broader range of business applications, of which traditional Web sites are only one.

Boomtown

In the dot-com boom days, the Internet was seen as a business model in and of itself. Hundreds of now-defunct companies planned to use the Internet to sell all manner of items, including toys, pet food, furniture, and music. The Internet was supposed to change everything (remember that?), becoming an enormous and ubiquitous storefront that would usher in an era of frictionless commerce and "disintermediate" the brick-and-mortar dinosaurs. To avoid this fate, the brick-and-mortars set about transforming themselves into

click-and-mortars.

As we all know, this story did not have a happy ending. But the brick-and-mortars did learn that the potential of the Internet as a business enablement medium had yet to be tapped. Therefore, the end of the dot-com era did not mean the end of e-business. Rather, we are now entering a new era in which true "business" is being put back into "e-business."

Figure 1 tracks the market's evolution. The vertical axis represents the increasing complexity of Web sites and Web-enabled applications. Web sites began as simple informational or marketing sites with relatively static content: news, entertainment, message boards, and corporate "brochureware."

The next phase of development incorporated dynamic or interactive elements that leveraged database and transaction-engine technologies to enable applications such as content archiving/searches and e-commerce.

Finally, the Web site complexity axis now stretches upward toward integrated business processes that encompass a range of functions — customer-facing activities such as sales, marketing, advertising, and corporate branding.

These are combined with internal applications that feed into the business processes.

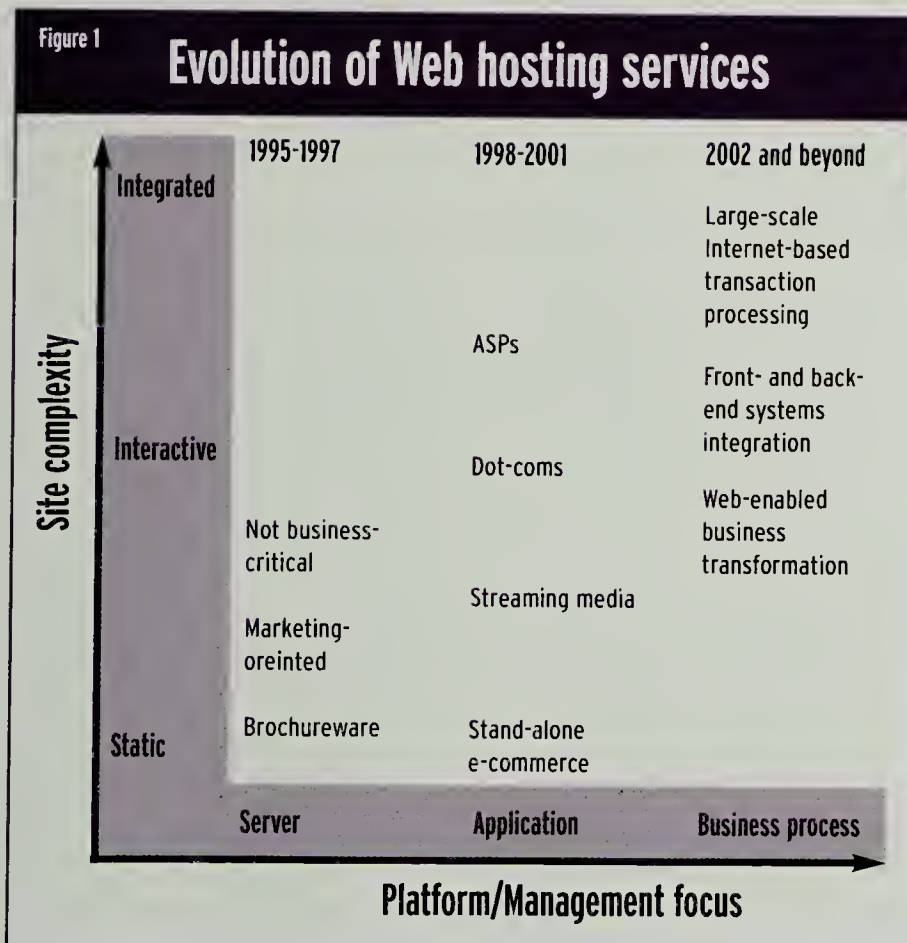At this level, the focus shifts away from the mere establishment of a Web presence ("selling stuff on the Web") toward the Web-enablement of the business itself, leveraging the Internet to change the way business is done. Enterprises are streamlining their internal business processes and opening new channels for customer service, product/service delivery, distribution, and procurement by leveraging application servers to Web-enable their core business applications. In addition, enterprises are using the Internet as a transactional and connectivity medium for intra- and inter-company exchanges. In other words, the market is evolving away from the dot-com era model of *Internet as the business* to a modern, post-bubble notion of *business on the Internet*.

This evolution creates technology and business-process transformation issues that many enterprises have not anticipated. Outsourced hosting provides a solution to the complexity of designing, building, maintaining, and managing a "next-phase" e-business infrastructure.

The horizontal axis of Figure 1 highlights service providers' evolving value proposition and the focus of their management/value-added services development. Traditional Web hosters focus primarily on three items:

- The physical data center infrastructure
- Connectivity from the data center to the Internet
- Front-end Web server management

However, enterprises' increasingly broad e-business infrastructure requirements mandate greater atten-

Figure 1

Evolution of Web hosting services

Site complexity	1995-1997	1998-2001	2002 and beyond
Integrated			Large-scale Internet-based transaction processing
		ASPs	
			Front- and back-end systems integration
Interactive		Dot-coms	
	Not business-critical		Web-enabled business transformation
		Streaming media	
	Marketing-oreinted		
Static	Brochureware	Stand-alone e-commerce	
	Server	Application	Business process

Platform/Management focus

tion to the management and delivery of applications. In this next phase, the offerings of a new breed of managed hosting service providers (managed HSPs) will augment traditional Web hosting services with a higher level of management, monitoring, and testing capabilities.

Increasingly, enterprises view their Web infrastructure platforms as strategic components of their businesses. As such, they look to managed HSPs to integrate application and performance management functions into the infrastructure.

Application servers: Transaction engines of the Internet

In this new world of business on the Internet, Web sites are only one piece of the puzzle; they function more as portals to an increasing range of internal and external business functions than as stand-alone applications. As a result, Web servers are ceding the limelight to application servers.

Application servers play an important role in the enablement of business on the Internet, serving as the command, control, communications, and intelligence layer of e-business infrastructure. Platforms such as IBM's WebSphere, BEA Systems' WebLogic, Microsoft's .NET Enterprise Server Suite, Sun Microsystems' iPlanet™ Application Server, and others process and execute the underlying business logic of online transactions.

Application servers sit between the various online solutions (tools for sales, financial transactions, etc.) and the Web server infrastructure. They accept customer requests from the public-facing Web site, run the business-logic components, and connect the application to the back-end components belonging to the enterprises, partners, and suppliers that feed into the solution's value chain.

Because the back-end components of online solutions often run on traditional client-server or mainframe platforms, the middleware capabilities of application servers enable enterprises to bridge the gap between legacy and Web-enabled environments, and to manage and deliver diverse applications on unified platforms. In addition, the e-business platform environment that application servers provide offers enterprises a framework for developing and integrating new applications into their online solutions in a scalable, rapidly provisionable manner.

Application servers manage the entire transaction process by maintaining the integrity and persistence of the transaction (i.e., state management) and provide the necessary processing power to support hundreds or thousands of concurrent sessions.

Not an island

Enterprises' Web strategies are no longer isolated from the rest of the business process; they now involve applications that were developed and designed to serve core business functions that predate the Internet era. While application servers are at the heart of transaction processing on the Internet, they must work in tandem with other infrastructure elements, including the following:

● Security features such as fire-walls and virtual private networks, which segregate the business process environment and access authentication policies and technologies such as digital signatures.

● Redundancy and fail-over features such as load-balanced Web and application servers configured to ensure application uptime, availability, and redundant network connections to the Internet.

In general, application servers play a starring role in the evolution of business computing on the Internet. The evolution of the "Web services" concept, and the associated development of the XML-based family of open standards, further advances the concept of computing on the Internet by eliminating the need for middleware and allowing applications to connect and interact, regardless of their distributed component architecture. The endgame is the digital extension of the enterprise — the linking together of the internal enterprise; partners; suppliers; and customer systems that enable business processes.

The optimized network

There's no question that the role of the IP backbone has assumed paramount importance in the data center environment. Most IP backbone carrier networks are based on optical nodes that connect major metropolitan cities. These nodes commonly operate at speeds of OC-48 (2.5G bit/sec.) to OC-192 (10G bit/sec.). Some backbone providers own their networks, while others have built their networks using leased fiber capacity. Several companies have spent billions constructing national

and global fiber networks over the past few years. However, despite this heavy investment, Internet backbone space remains a highly concentrated sector; approximately 10 backbone service providers account for more than 80% of total U.S. IP traffic.

It's not necessary to be a Tier-1 ISP to provide high-quality bandwidth services. However, network ownership does bring such advantages as quality control, predictable costs, and the ability to rapidly scale backbone capacity to meet customer needs. With the growth of Web-based applications in both customer-facing and back-office environments, the IP network becomes a critical mechanism for delivery of these applications. Digex's ability to leverage WorldCom's global IP network gives Digex a competitive edge, enabling it not only to support Web-based applications but also to deliver applications on a worldwide basis.

It's fashionable these days to speak of a glut in network capacity, and to dismiss the importance of bandwidth and network facilities with regard to data centers and hosting. However, while it may be easy for some companies to lease a few high-speed circuits, the management of a global network is quite another matter. Providing optimal network performance in today's demanding business environment is still a major challenge for any hosting provider.

There are several major considerations involved in designing and configuring the optimal backbone network:

● Network availability and geographic reach. Thousands of compa-

nies provide Internet connectivity, but only a few, such as WorldCom, can provide national or global access. Carriers that lease network capacity supplement their lack of coverage by backhauling customer traffic to their nearest point of presence (POP). This method adds additional potential points of failure and can introduce network latency and packet loss.

● Efficient and rapid routing and traffic flows through peering. Most Tier-1 backbone providers have established peering relationships.

The evolution of Web hosting has created technology and business issues that many enterprises did not anticipate. Outsourced hosting addresses many of the issues around designing and maintaining an e-business infrastructure.

"Peering" is the process of exchanging traffic from one network to another with no monetary exchange between the carriers. Peering has direct bearing on network latency and Web site performance.

For example, it's not unusual for a typical end user's Internet traffic to traverse 17 different Internet nodes (hops) on its way to its destination. With proper configuration, presence

in major markets, and proximity to network hubs, end users on backbone networks such as WorldCom's should be able to reach their destinations in an average of five hops (and, in many cases, just one). For the hosting customer, efficient networks and peering can lead to an average Web site and applications performance improvement of 20%.

● Peering restrictions. It's important to note that peering is limited to a select group of Tier 1 providers. Some service providers source their connectivity to the Internet via IP upstream transit services purchased from backbone players such as WorldCom and others. This is a wholesale transaction, not a peering agreement.

● Reliability and redundancy. One of the most critical aspects of maintaining uptime for an e-business platform is the elimination of multiple potential points of failure in the network. This can be implemented by choosing providers that offer network connectivity in multiple fiber routes and POPs. Providers should also offer rapidly scalable bandwidth options. The more available POPs a service provider can offer, the higher the probability that customers will realize cost savings and achieve higher network performance.

● Service Level Agreements. The ability to offer an SLA, and the granularity of that SLA, can be greatly enhanced if the hosting service provider owns the underlying network. Providers that source their network connectivity from multiple backbone providers must establish and manage multiple SLAs.

Enterprises using hosting service providers with multi-sourced networks run the risk of lower quality-of-service assurance and significant downtime in the event of an outage.

● Network management. The ownership and control of the network also affects a carrier's ability to manage that network. Service providers that lease capacity from multiple sources face the challenge of meshing and monitoring resources from disparate networks. The Operations Support Systems (OSS) required to manage a multiple-source network are complex and expensive to maintain. Network ownership dramatically reduces the OSS cost structure and simplifies the process of fault isolation.

● Dynamic resource allocation. Service providers such as WorldCom can rapidly reallocate bandwidth as required by customers. Enterprises can subscribe to specific bandwidth pipes and classes of service, depending on their applications' requirements. Single-source backbone providers have the ability to rapidly scale resources and allocate bandwidth as required by their users.

Managing complexity with automation and intelligence

The decision to migrate business processes to the Internet and the Web-enablement of enterprise applications is only one piece of the puzzle. Anyone who has managed a large-scale automation production environment is well aware of the myriad issues that must be dealt with on a daily basis. Managing the complexity of the many moving parts of mission-

critical business applications is further complicated when the Internet is added to the mix.

The infrastructure framework for business on the Internet is relatively new and is evolving rapidly. Traditional tools and processes for configuration, monitoring, and management have not kept up with the operational requirements of Web
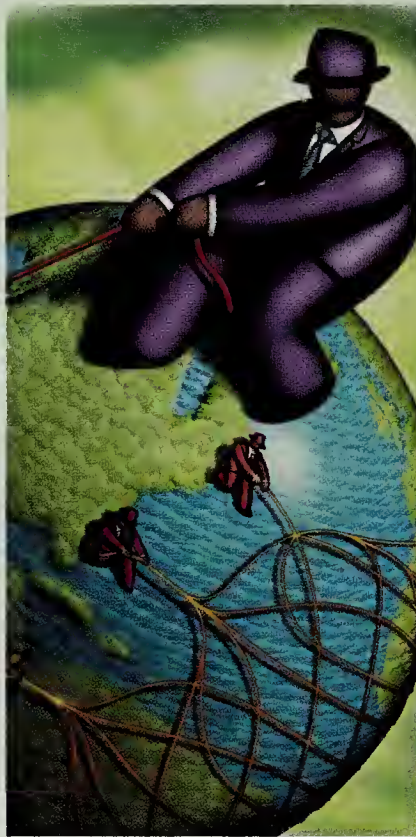
architectures. As a result, many enterprises that have traditionally managed their own systems and legacy applications, or hosted their own non-mission-critical Web front-ends in-house, are now turning instead to managed HSPs.

The reason: by their very nature, top managed HSPs boast expertise in assembling, implementing, and managing the operating environment

required to do business on the Internet. A top-notch managed HSP can offer fully managed services that optimize, scale, and guarantee the operation of enterprises' Web-enabled application infrastructures.

Digex fits the bill on all counts, combining expertise in and support for best-of-breed application and database servers with an automated, process-driven approach to building and operating Internet application infrastructures. Key elements that ensure that applications run optimally on a hosted Web-application infrastructure include the following:

● Production environments based on standardized server builds. The implementation of standard configurations makes it easier for the HSP to manage server hardware and operating systems in an automated fashion across its data center network (and, eventually, at the enterprise corporate data center).

● Tight integration between the managed HSP's production environment and the enterprise's development environment. This element ensures optimal performance of the hosting infrastructure and the application. The process involves compatibility testing of the application and the production environment; stress and performance testing in a simulated launch environment to determine how the application will perform in a real-world production environment; and migration testing for the seamless transition of applications to the HSP's staging environment and production environment. The process also includes methodologies for automated change management.

• Comprehensive monitoring systems and rapid-response repair procedures. Managed solutions-focused HSPs should be able to offer systems that combine off-the-shelf and customized tools to monitor the enterprise's entire Web implementation, identify the root cause of any problem, and accelerate problem resolution. Correlation tools that incorporate the logic of the staging and production environments, as well as the business application logic, enable the HSP to isolate faults down to the most definitive level. This allows the enterprise to focus on the development of the business process and applications that power it, rather than the underlying transaction-enablement and delivery infrastructure.

Real business, not just e-business

As Internet technologies mature and improve, e-business is moving beyond untethered, single-function Web services such as content presentation, basic database applications, and low-level e-commerce. Today, e-business is becoming more than just a stand-alone add-on to the "real" business.

Moreover, the Internet is closer to realizing its initial promise of an efficient, ubiquitous, and (increasingly) frictionless environment in which enterprises can refine the ways they create, deliver, and manage their value propositions. New and existing business functions that are optimized to run on large-scale, applications-focused Web infrastructures are changing the way companies interact with their clients and partners. As a result, business models and, in some cases, entire industries are being transformed and redefined.

However, the application-supporting infrastructure platforms, technologies, and tools that facilitate this migration are evolving rapidly in terms of their stability, functionality, and transformational potential. Enterprises can rely on their internal personnel and capital budgets to stay on top of these developments. Alternatively, they can implement

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As Internet technologies improve, e-business is moving beyond untethered, single-function Web services; today, executives realize that e-business is more than just a stand-alone add-on to the "real" business.

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this transformation in conjunction with a managed HSP partner. Examples of complex Web-enabled solutions hosted by Digex include an automated mortgage processing and trading application for a financial institution's partner portal; an online customer account and transaction application for a major financial services company; supply-chain management for a major home-design retailer; and an automated ticketing application for a major airline.

Managed HSPs such as Digex design, build, and manage the production and distribution environments for mission-critical business on the Internet. Digex developed and continues to refine a new concept that envisions Internet infrastructure as more than just independent pieces. Rather, the components — network connectivity, data centers, hardware, software, systems, security, and application optimization and management services — act in concert with the actual application as interdependent elements that enable the transition toward business on the Internet. A managed provider such as Digex can assist an enterprise by:

• Establishing a comprehensive lab environment in which new technologies are introduced in a controlled environment and tested with all other elements of an Internet production system.

• Designing and maintaining a solid network infrastructure that accommodates application processing; data replication; large-scale data management, movement, and storage; and has the capacity to carry massive business transactions.

• Developing the best-of-breed monitoring and management tools required for a well-run production system on the Internet. The expertise of the support personnel, combined with well-documented procedures, serve as the intelligence behind the automation of business applications.

• Acting as an extension of the corporate IT department, accommodating open and automated communications between the hosted environment and in-house systems. ❖

NEWS

Companies Moving Slowly on P3P Adoption

BY PATRICK THIBODEAU

Some companies are gradually implementing the proposed Platform for Privacy Preferences (P3P) Internet data privacy specification on their Web sites. But it remains unclear whether P3P will succeed as a standard.

At this point, the P3P specification is primarily being eyed by companies that have already taken leadership roles on data privacy issues. For example, Cincinnati-based Procter & Gamble Co. is testing P3P after having previously adopted a worldwide privacy policy that meets restrictive European data-protection rules.

P&G has implemented P3P on its main corporate Web site to gauge user response before deciding whether to expand the specification to about 500 related sites, said Mel Peterson, chief privacy officer at the consumer products giant.

Companies adopting P3P, which is being developed by the World Wide Web Consortium (W3C), must convert their data privacy policies to a question-and-answer format that's XML-based and machine-readable. P3P-enabled Web browsers can then "read" those policies and compare them with privacy preferences set by individual Internet users.

The Microsoft Factor

What has some companies betting on the future of P3P is Microsoft Corp.'s inclusion of the emerging standard in its Internet Explorer 6 browser.

That's "a huge driver" for P3P adoption, said Christopher Fisher, information systems director at Royal Appliance Manufacturing Co. in Glenwillow, Ohio. The company has begun making its Web site P3P-ready.

But adopting P3P raises some big legal issues, according to corporate officials and privacy analysts. Translating a detailed data-privacy policy into a machine-readable format can be complicated, they said, adding that P3P implementations shouldn't be handled solely by IT departments.

The codes used as part of P3P implementations "are legal promises," said Benjamin Wright, a Dallas-based attorney and electronic law expert. "It's like a contract."

Some companies are waiting to make decisions about adopting P3P until it's finalized, which may not happen until early next year. "We have not come to any conclusions yet," said Kevin Pursglove, a spokesman for San Jose-based eBay Inc.

Lorrie Cranor, chairwoman of the W3C's P3P working group and a principal technical staff member at AT&T Labs in Florham Park, N.J., said any last-minute changes to the specification will be backward-compatible. ▶

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PATRICIA KEEFE

Fight the Monopoly

SETTLEMENT, SCHMETTLEMENT. Microsoft is on a roll these days. If users don't take some action, the convicted monopolist is going to roll right over them.

Once, no one ever got fired for buying Big (Proprietary) Blue. Times changed, but IBM didn't. Today, a chastened and much wiser IBM, having escaped antitrust and listened to its users, has kicked the "we are the center of the world" habit and supports standards and even open-source systems (see story, page 42). By contrast, Microsoft, now the industry's top gun, remains obsessed with tying everything back to Windows. It's now working to extend its iron grip on the desktop to the enterprise and all the way out to the Internet — antitrust conviction be damned.

Whether it's because of changes in certification programs; expensive, forced upgrades; new licensing terms that let Microsoft shut off your operating system during a dispute; or the required collection of customer data in order to turn software on, users are seething about "bloatware" and Big Brother. Yet Microsoft has made few concessions. Indeed, everywhere you look, the company is snubbing users when it's not shaking them down.

It's no surprise that the past eight months of headlines is a blur of anger and concern. A recent study conducted by Giga Information Group and Windows integrator Sunbelt Software revealed that 36% of the 4,550 technology professionals polled are so disturbed by new Microsoft's licensing plans that you are considering switching to alternative products. But will you?

If you are really angry, fed up and unwilling to be held hostage, consider your options: 1. Work to dilute Microsoft's presence and control in your company. 2. If you can, don't just threaten to toss Microsoft out of your operations, do it. 3. Finally, help start a vocal and effective user group for Microsoft users. All the big enterprise vendors, from IBM to Hewlett-Packard to Oracle, have had one. Where is the united user voice representing Microsoft customers?

It's going to take exactly this sort of extreme pressure to rein Microsoft in — you certainly won't be able to count on the feds to do it for you. And it will take more than complaining. It requires action by the enterprise users that Microsoft should take seriously. If that doesn't get Redmond's attention, nothing will. ◗

PATRICIA KEEFE is editorial director at *Computerworld*. You can contact her at patricia_keefe@computerworld.com.

PIMM FOX

Microsoft Vision Lacks Content

A RECENT TV COMMERCIAL features the late kung fu expert Bruce Lee describing how water, when poured into a glass, becomes the glass, how content is defined by form. That's a good way to describe the state of online content management tools. We're so hung up on the forms — product content, online catalogs, Web site information –– linked to repositories such as databases, CRM and ERP systems that we've lost sight of the information.

Microsoft in particular has a blinkered vision of Web services and of .Net as a methodology for distributing and accessing content that is all form and no function.

Most large enterprises look for a content management system that easily plugs into a J2EE environment, such as the WebLogic server from BEA Systems or IBM's WebSphere. But Microsoft's content strategy (based on its purchase of NCompass Labs) compels you to use all Microsoft parts, s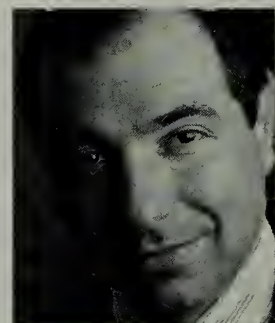uch as Microsoft's SharePoint Portal Server 2001 and SQL Server. The problem is that SharePoint isn't terribly robust, according to Lou Latham, an analyst at Gartner. Rather, it's good for a department in a small or midsize organization. "They're not players in the large-scale, global, heterogeneous software environments such as SAP, Domino, WebSphere and WebLogic," says Latham.

And having a content management server that doesn't tolerate Oracle databases is about as functional as running a marathon in high heels.

As Latham puts it, "Microsoft doesn't play well with other children."

Latham says that enterprises that have lots of servers (more than 50), millions of objects swapping in and out of a page or thousands of content authors should look more closely at Java-based software that's interoperable with other vendors' products. Companies such as Vignette, Documentum, Interwoven and even portal player BroadVision would fit the bill — admittedly at a higher price. However, Vignette has noticed Microsoft's limitations and responded by offering a "six-pack" solution designed for six servers.

PIMM FOX is *Computerworld*'s West Coast bureau chief. Contact him at pimm_fox@computerworld.com.

WE'RE AFRAID IT MIGHT BE ANTHRAX, AND WE NEED TO DO SOME RESEARCH.

LPDZC
STNZFGE

PUBLIC HEALTH IT INFRASTRUCTURE

"Microsoft's content management products are focused on core functionality for traditional content management, authoring, workflow, permission and templates," Latham says.

Basic document creation and publishing in conjunction with a portal is fine, but CrownPeak Technology offers that and more, with the cost savings of an ASP model. There's little argument that Microsoft's SharePoint and commerce server are a nice little portal suite, but it isn't enterprise-class stuff. The company's inflexible stance on interoperability is a sign it won't recognize the difference between content and information. ▶

ALEX TORRALBAS

Events of Sept. 11 Show That IT Has Heroes, Too

WITHIN A DAY of the horrors of Sept. 11, mixed in with all the other thoughts and emotions, I found myself asking, "How are these companies going to get up and running in a hurry?" Any company that faces a disaster of the magnitude faced by those in lower Manhattan has a critical job to do. and these companies have the distinction of being critical to the whole world's economy.

The IT challenge of recovery, so well covered in *Computerworld* in the immediate aftermath of Sept. 11, was, and still is, monumental.

Some of the biggest companies kept ready-to-go backup facilities. Most couldn't afford such a fail-safe strategy but managed through ingenuity and hard work to regain some semblance of normalcy within days.

One of the more clever solutions was a brokerage that took over a midtown hotel. The hotel has high-speed Internet connections in each room: instant offices. The ballrooms are wired: instant cube-land.

The key part of every story that day was the human element, and that was certainly true of the IT stories. These companies depended on IT staff for their survival. That was true before Sept. 11, but IT really had to come through that day, and it did. Amid the tragedy and heroism, the stories of those who strung LAN cabling, cloned servers from backups and prepped PCs fresh out of boxes may not sound like much. But it's what IT has al-

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ways done: make business *possible*.

If anything good can come out of Sept. 11, my hope for IT is the overdue recognition that the men and women in the data center, at the help desk or at your desk fiddling with a pesky CD-ROM matter more than you ever imagined. On a daily basis, they keep business in business.

When the sales hotshot announces a new customer, requiring that the whole infrastructure double in capacity, improve in service and reliability, and deliver the goods in two weeks, he gets a bonus and a promotion, but IT has to call home to apologize because, "You may not see a lot of me for a while."

I spend a lot less time in the IT trenches than I did a couple of years ago, but I'm still there enough to know that, too often, we're seen as lit-

tle more than a slightly brighter version of the building maintenance staffers who replace bulbs and reset security keypads. That may seem overly harsh, but I'm going to bet that there's a bunch of you out there in IT who have felt that way at one time or another.

Certainly in the corridors of power, notwithstanding those with the fancy CIO title, IT has almost zero influence, power, prestige or say in corporate life, at least outside of dot-com companies, which are almost entirely dependent on IT.

That was a bit of a trick sentence, because all businesses today, in one way or another, are totally dependent on IT. Corporate America really needs to reward this where it counts most, with respect and thanks, certainly, but also with a place at the boardroom table, with a real voice. ▶

READERS' LETTERS

HR Screening Is Weak

THERE'S A reason Vince Tuesday is getting three-page résumés ["Security Manager Explains How Not to Get a Job," Technology, Oct. 8]. Applicants have learned that many résumés pass an HR screening that is either automated or done by a human not much brighter than a 486. You need the right keywords, so you put them all in. One interview I had stated that "Ethernet" and "SQL" were required. When I tried to figure out during the interview if they meant ability to make Cat 5 cables or general knowledge of networking, the HR person didn't know. HR also didn't know whether "SQL" was supposed to be Structured Query Language, SQL Server or something else. Turns out these were keywords in the contract, with no further explanation.
Joe Della Barba
Network engineer
RSIS Inc.
Baltimore

Thanks for Solutions

IN THE OCT. 15 Storage Knowledge Center, "Old-Fashioned Me-

dia Have Advantages for Long-Term Storage" is absolutely the best article I have seen recently on the partnership required between IT and records management to successfully accomplish the task of preserving and providing efficient access to corporate information assets. Your points are right on target, and you provide some guidance for solving the problem.

Most articles just focus on the problem; we all know that we have the problem, but we need to be directed toward solutions. If IT, records management and business unit managers work together, corporations can address these issues, implement efficient methodologies and then get back to their true missions.

Thank you for highlighting solid steps toward that solution.
DeBe R. Wantzloeben
ARMA board chairman
San Antonio chapter

So Long to Loyalty

THE FOLLOWING line in the article "Return of the Dot-Goners" [Business Careers, Oct. 1] caught my eye: "Job loyalty may

also be gone, as IT professionals have grown to appreciate their worth, at least within savvy corporations." Job loyalty disappeared when corporate managers put into play Peter Drucker's idea that employees are burdens and not assets.

Loyalty is a two-way street. Why should any IT professional sacrifice for an employer that's looking to eliminate his position?
John Pittaway
Contract programmer
Santa Ana, Calif.
jpittawa@pacbell.net

Too Many Dips

I PURCHASE a product from Microsoft (first dip of the bucket). Next, I pay for a license (another dip of the bucket). Finally, I have to pay for a support contract (third dip of the bucket). I can see the justification for the first and third dips of the bucket, but what of the second ["Users Force Microsoft's Hand," Page One, Oct. 15]? Shouldn't purchasing a product be sufficient to enable me to use the product? Or if I license the product, shouldn't that include support? It seems that the entire cost structure of Micro-

soft is all about going back to the well.
Bill Verzal
Vernon Hills, Ill.

XP Warrants Aversion

ONE KEY to corporations' aversion to upgrading to Windows XP is Microsoft's licensing changes ["Corporate Users Cool to Windows XP," Page One, Oct. 8]. I want my upgrade path to be in my control, and I want it to be affordable. When will I upgrade beyond Windows 2000? When I'm able to cost-justify the feature sets, performance gains in the software, and deployment costs and challenges.
Cameron Rose
Boise, Idaho

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CRM for the People

CUSTOMER RELATIONSHIP MANAGEMENT is in need of changes — fast. Wrong perceptions and bad execution could take it down a path it doesn't need to go. Who can we blame? There are the vendors that mistakenly aim their marketing and sales pitches at their potential customers' CFOs and vice presidents of IT, then whip customer expectations too high with promises of products they haven't yet released. How about the systems integrators who make commitments for shorter implementation times and less cost than will actually be necessary?

Then we have the vendor salespeople who, in the name of getting the deal, promise customers technical wizardry that simply can't be done. And what about user CFOs who want a return on investment in unconscionably short time periods? Or analysts who make their recommendations with far too much emphasis on CRM package functionality?

Finally, we have end users who don't want to use the newly implemented applications because they've been using Excel for years.

These mind-sets lead to CRM's oft-quoted 55% to 75% failure rate.

If changes on all sides aren't made, CRM will hit the same walls that ERP hit two years ago. The irony is that many leading CRM vendors are also leading ERP purveyors — particularly PeopleSoft, Oracle and SAP. Painful lessons can be learned from their past two years. Some have taken steps to fix their problems (PeopleSoft), some haven't (Oracle), and some are just coming into the CRM picture (SAP). These same scenarios also apply to pure CRM companies, such as Siebel. The basic message: Make CRM work now, before it becomes ERP redux.

Don't get me wrong. CRM is a superb value. The people who make and sell the software are fine human beings. But the rumblings are there, the problems exist, and we need to push for change.

What might those changes be?

First, the obsession with CRM functionality needs to end. If you overlap the major vendors' applications, you find that most of the functions are identical. How well that functionality works is more important than how much of it there is.

Second, vendors and potential customers should focus on the end users, who should be part of the stakeholders' team and involved in package selection from the beginning. The natural leaders in departments, those whom staffs look up to, should be the departments' representatives on the customers' steering committees. This empowers the end users into becoming evangelists who can excite their colleagues about using the CRM applications.

Third, systems integrators and vendor salespeople should promise just the earth, not the stars. They should remember that they're not just landing a deal; they're also striking up an ongoing relationship with a customer that's expected to satisfy both parties. But at the same time, the customer should remember that vendors and integrators need to make a profit. Fairness, a seemingly elusive goal, does and can exist in these deals.

Fourth, CFOs need to stop trying to get immediate ROI. CRM systems are large and complex. Changes in the corporate culture are required before they will work. CFOs should be thinking strategically, not small.

Fifth, analysts need to use their formidable power wisely. Be less concerned with the CRM vendor's position in the standings and more with application usability. The functions of a CRM application are less important than how easily and transparently the end user can access that functionality. The regard that users have for the value of CRM applications is more important than a vendor's rank, despite what vendors or analysts may think.

Finally, to end users: Just use the thing. It's to your benefit. Whether you've been at your company 30 years or three weeks, CRM can provide outstanding results. Spend the necessary time to learn how it works.

If all this happens, CRM can be the blockbuster of 2002.

If it doesn't happen, it will be 2002's busted block. ▶

PAUL GREENBERG is executive vice president at Live Wire Inc., a CRM-focused consulting firm. He's also the author of *CRM at the Speed of Light* (McGraw-Hill, 2001) and is working on its second edition. Contact him at pgreenberg@live-wire.net.

"I MUST HURRY, for there they go and I am their leader."

It's just an inspirational quote that Theresa Senter spotted on a co-worker's wall, but she hasn't been able to get out it of her mind. The quote captures the essence of what makes a true leader, says Senter, director of global infrastructure services at The Coca-Cola Co. in Atlanta. It's someone who can point employees in the right direction and let them take charge from there.

"I love riding with them," she says. "It's a partnership, not a hierarchy."

Words to live by. But such wisdom typically isn't handed down to new leaders when they take on their first management jobs. Good management training courses provide some guidelines, but it often takes years before the pieces start to come together and the job makes sense, say veterans.

"It's something we do a poor job of in general," Senter says of management training. "So many times we go, 'Poof! You're a manager.' "

Running meetings, balancing budgets, selling executive boards on ideas, counseling troubled workers and negotiating inter- and intradepartmental battles: New managers can easily find themselves overwhelmed by their new roles. It can be tough work, but Senter's advice is to keep it simple. Everything boils down to the business and the people, and a good manager puts them above all else.

A favorite management technique for Peggy Fechtmann, senior vice president of IT services and CIO of corporate systems at New York-based Metropolitan Life Insurance Co., is to give workers what she calls "stretch jobs," roles that accomplish a major goal for the company and force employees to stretch themselves beyond what they think they can handle.

"Some people see it as burdensome," she says. "Some people see it as the challenge they've been looking for."

For instance, Fechtmann's department recently finished developing a new accounts-payable and asset-management system for Met Life. It was a "big, cornerstone project" that was slated to expand to all of Met Life's subsidiaries, and it came with a $20 million price tag, says Fechtmann. As the project wound down, Fechtmann asked one of the project leaders a difficult question: If he knew ahead of time what the project would entail — 15-to-18-hour workdays and major headaches — would he do it again?

"He said, 'I wouldn't have missed it for the world,' " Fechtmann recalls. "This guy will never be the same as a result of what he went through: the exhilaration and the sense of satisfaction. To me, that said it all."

Words to the Wise

To be a good manager, you must be able to motivate your staff, says Senter. The question remains, How do you do that? The key is to learn to listen to workers and, sometimes, to hear things that aren't said, explains Fechtmann.

A manager also needs to learn how to be heard by executives, Senter adds. It's critical that IT managers learn business-speak in order to secure needed support from senior management.

"You don't talk about servers and megabytes and bandwidth," she says. "You talk about how the

Running Sharp Meetings

■ **Before calling a meeting,** be clear about the outcome you hope to achieve.

■ **Outline a specific agenda,** time frame and list of key stakeholders who should attend.

■ **Set a time limit** for the meeting and encourage participants to mull ideas before the meeting.

■ **Start the meeting** by going over the agenda, reminding participants of the goal and asking them to stay on course. If someone veers off the topic, call a "time-out," restate the agenda and ask participants to save other topics for later.

■ **At the end of the meeting,** summarize the findings, come up with an action plan detailing next steps and delegate the tasks to participants.

■ **After the meeting,** compile that information into a memo for participants and ask them for feedback or other thoughts that weren't captured in your summary.

business benefits from those things."

Reading annual reports and other management materials can help IT professionals speak the language of business, she says. It's also a good idea to get close to the company's human resources and public relations staffers, because they can help you learn how to get your message across to senior leaders, says Senter.

Craig Washington, an IT manager for the past three years in the New York office at Barclay's Capital, has come up with a game to help his staffers communicate their technical work in general business terms. Every so often, he has them describe something, like a pen, without actually using the word *pen*. He also makes a point of shifting people's jobs around — such as switching a business analyst in the commercial banking group with a business analyst who works in the asset management division at the bank — so they can see the different aspects of the business and understand how everything fits together.

On the project management end, Washington

Poof! You're a Manager

Here are some ways new supervisors can motivate workers, manage projects and communicate with business counterparts effectively. By Melissa Solomon

BUSINESS

stresses the importance of involving end users in project development. That makes them stakeholders, and "they become your best salespeople," he says.

Mark Hedley, senior vice president and chief technology officer at Dallas-based Wyndham International Inc., has taken that approach a step further: He's created a formal system for involving users in the development process. He breaks his projects into five-section strategic plans, with 90-day increments for each step.

While such techniques help managers get a handle on day-to-day operations, a good leader also needs to step back and look at the big picture. Sometimes, that means being brave enough to question current processes, says Fechtmann.

When she starts a new job, she throws all assumptions out the window and asks two questions: Are the clients' needs being satisfied, and what does her group need to do to ensure that their needs will be satisfied in the future? If their needs aren't being met, Fechtmann may move responsibilities around,

ax an existing project or launch a new one.

"Who's to say that the status quo is where we want to be?" she asks.

One of the most difficult questions a manager faces is how much to involve employees in decision-making. A good manager knows how to communicate with workers and take feedback from them. "But then you have to be willing to say, 'This is the way we're going to go.' " says Fechtmann. "You can't get stuck in analysis paralysis."

But, she adds, the best managers are comfortable with the fact that they don't have all the answers.

"It's a process you work on every day," she says. "You're never finished." ◗

Quick Link ◗ To learn more about the tough, yet rewarding, world of being a manager, go to **www.computerworld.com/q?24079**
Mark Hedley had just started as Wyndham International's chief technology officer in May 2000 when he discovered that the company was cutting its workforce by 37%. To find out how he dealt with it, go to **www.computerworld.com/q?24080**

JOSEF GAST

Tips For New Managers

The best advice for new managers: Do unto others as you would have them do unto you. But on a more practical level, the following can go a long way toward building a solid manager/employee relationship:

■ **Don't make promises you can't or won't keep.** One of the worst things you can do is promise a bonus or reward that you never give.

■ **Don't offer inappropriate rewards.** Giving a coffee mug to a worker who led a $20 million enterprise resource planning initiative is more of an insult than a reward.

■ **Reward ambitious workers** with important projects or tasks.

■ **Set aside time to meet with workers** to talk about how things are going both from their perspectives and yours.

■ **Ask workers about their career goals** and whether there's anything you can do to help them reach their objectives.

■ **Offer your top performers** the chance to participate in a training course of their choice.

■ **Ask workers about their hobbies** and interests and then reward their good work with gift certificates to match those interests (for example, museum passes for a history buff).

■ **Comment on good or bad work right away.** Don't save everything – positive and negative – for one big feedback session.

■ **Don't assume good workers know how much they're valued** just because you never give them negative feedback. A sure-fire way to get someone to stop performing well is to ignore them. Tell them specifically why their work is so valuable.

■ **Take your role as manager seriously.** Don't put off bonuses or rewards or downplay the importance of performance evaluations.

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Microsoft

In the debate over whom the CIO should report to – the CEO or the CFO – passions run deep.
By Lee Copeland

ERGIN USKUP talks to the CEO at United Stationers Inc. on a daily basis, and he wouldn't have it any other way.

Uskup — the CIO at the Des Plaines, Ill.-based office-supplies wholesaler — reports directly to CEO Randall Larrimore. At his previous CIO post at Baxter Healthcare International Inc., Uskup reported to the chief financial officer.

While Uskup has nothing but praise for his former boss, he also says working under the scope of the CFO isn't the best place for a company's IT leader.

What difference does the corporate pecking order make on delivering strategic IT? A big one, say CIOs such as Uskup, who believe the best way to pave a successful e-business road map is to give the CIO a direct line to the CEO.

"The problem with reporting to the CFO is that one of their responsibilities is to have a critical eye on analyzing the financial performance of various business units," Uskup explains. "That puts the CFO in conflict with some divisions, whereas the CEO is in charge of the whole organization, so you're servicing the whole organization."

The debate itself isn't new. CEOs have been struggling with IT's rightful place within the corporate hierarchy for years. Computer systems became entrenched within the corporation more than 30 years ago. And since most of those systems aided in number crunching, it's no surprise that the CFO was
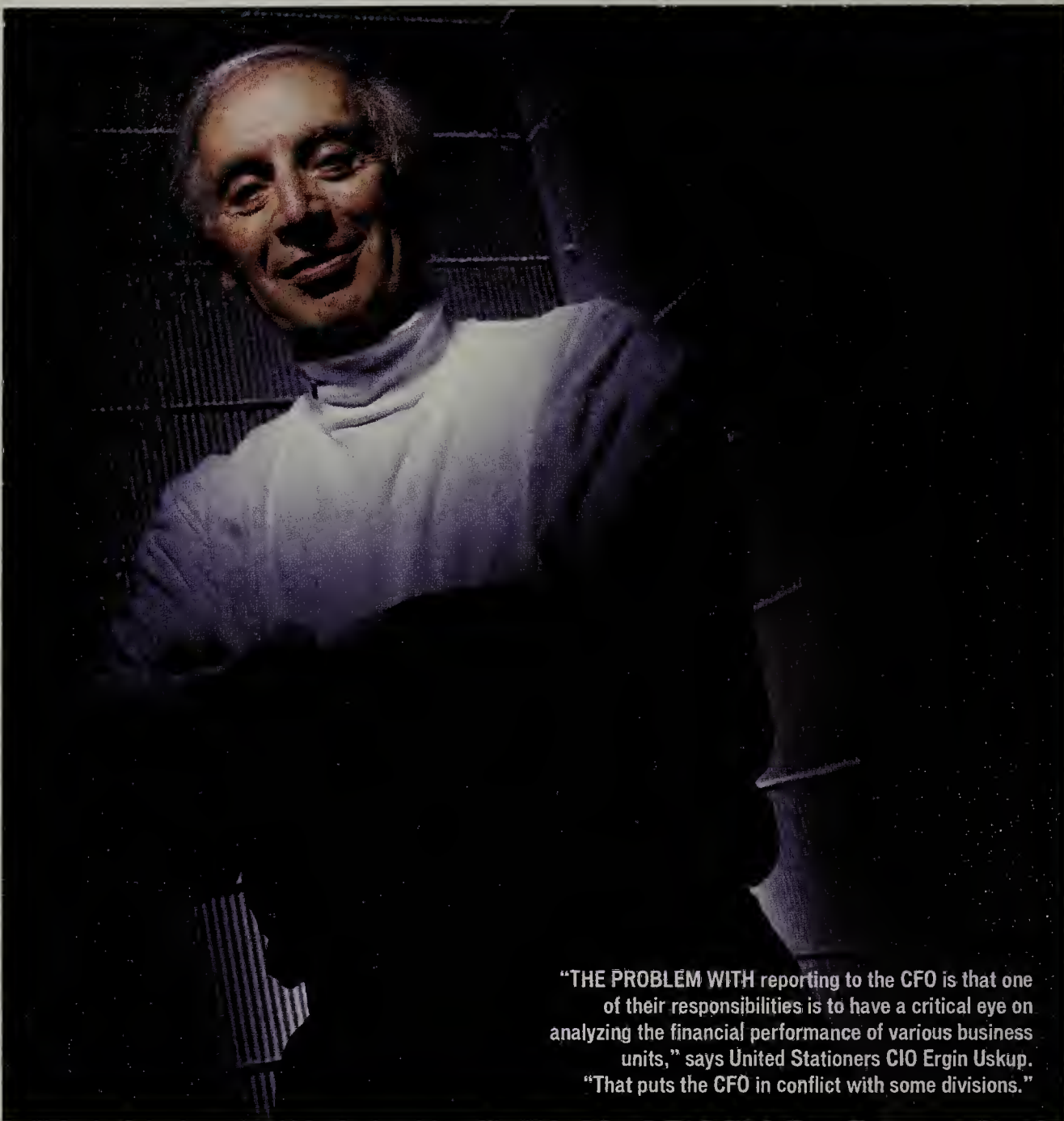
"THE PROBLEM WITH reporting to the CFO is that one of their responsibilities is to have a critical eye on analyzing the financial performance of various business units," says United Stationers CIO Ergin Uskup. "That puts the CFO in conflict with some divisions."

ANDY GOODWIN

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infrastructure: it starts with you.

When you left the office last night, you worked for a Midwest-based enterprise humming nicely along with ten accounts.

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charged with supervising IT expenditures.

That relationship is "a loss for the business, in terms of the exchange of information and prioritization of resources and investments," says Ed Bell, CIO at investment brokerage Commonwealth Financial Network in Waltham, Mass. Bell, who reports to the president of his company, expresses the viewpoint of many top IT chiefs. "What is lost is that the CIO won't know what the CEO is pushing toward and won't have the ability to directly educate the CEO as to what other opportunities exist," he says.

The debate typically hinges on whether to view IT as a cost center like human resources or as a critical part of a company's operations, which is a designation that's usually reserved for departments that generate income.

"There is always the complaint that reporting to the CFO makes the CIO strictly an extension of cost controls and financially driven exercises," says Tom Pettibone, managing partner at Transition Partners Co., a management consulting firm in Reston, Va. "The CIO used to be out of the main line of business, so it was generally more of a staff role."

Dave Weick, CIO at McDonald's Corp., echoes similar sentiments. But, at the $14 billion fast-food giant in Oak Park, Ill., the CIO does report to the CFO.

"When a CIO reports to the CFO, IT is often viewed as a staff function and cost center," says Weick. "I believe IT is an investment, not an administrative burden or a cost to reduce."

When Uskup was CIO at Baxter Healthcare, from 1986 to 1993, he reported to Bob Lambrix, who was then CFO at the $7 billion health care provider in Deerfield, Ill. Uskup describes Lambrix as an unusual CFO who took a strong interest in IT, even taking technical classes at Northwestern University.

But eight years later, Lambrix, now CEO of Denver-based US Medical Inc., says times have changed. "Finance used to be the backbone, and everything flowed through finance," Lambrix recalls. "The role of the CIO at the corporate level has changed. The CIO no longer has mainframe-processing responsibilities. IT impacts all functional areas."

Lambrix names better lines of communication and more strategic IT efforts as the advantages that stem from a direct CIO/CEO relationship.

CIO Consensus

Computerworld asked several CIOs what difference the corporate reporting structure really makes. The consensus: Reporting to the top executive has its advantages.

Catherine Maras-O'Leary, CIO for Cook County, Ill., a jurisdiction that includes 126 municipalities, reports to the president of Cook County's Board of Commissioners. That reporting structure makes it easier to embark on longer-term infrastructure improvements and technology projects that have longer returns on investment, she says.

"It's more advantageous to report to the CEO than the CFO," O'Leary says. "The CFO can be contrary to what CIO goals are, but his pay is based on financial bottom-line numbers. If a technology is harder to install than originally thought or if the budget rises, that's the angst of a CFO."

Three years ago, for example, Cook County launched an ambitious project to provide online access to property survey and assessment data. Maras-O'Leary says it's not something a CFO typically would sign off on. "It's like the plant manager who doesn't do preventative maintenance because his bonus is tied to lower reporting costs," she says.

But there are also situations in which reporting to the CEO isn't the best option, says Mark Zorko, a partner at Tatum CFO Partners LLP, an Atlanta-based financial officer outsourcing firm.

"I never met a CIO that doesn't think he should report to CEO," says Zorko, a former CFO. "Everybody wants to report to the CEO because he's farther up the food chain."

Zorko believes that the CIO's place on the corporate organizational chart should be based on whether the company is in a growth or stable mode. For example, if the company is embarking on a major enterprise resource planning system or technology implementation project, then the CIO should report to the CEO because the project involves major process re-engineering and thus significant organizational change, Zorko says.

But once the company shifts to maintenance mode, with no new technology systems slated for implementation and no anticipated major infrastructure changes, he says, the CEO should hand over the responsibility of managing the CIO to another executive, such as the chief operating officer or CFO. This is an "if" statement: Reporting to the CFO can and does work, if that individual is interested in IT.

"If the CFO embraces IT and understands the level of investments needed within the company, then it's a win-win situation," says Zorko. "But if the CFO doesn't have the time or the interest, it could be devastating."

Right Job, Wrong Boss

But what about those CIOs who want to rewrite the corporate organizational chart and pencil their names under the CEO's direct report list?

Seeking to change the reporting structure can create irreparable political problems within an organization for an overly ambitious CIO, says Pettibone. Instead, he recommends that CIOs evaluate the reporting structure and set the condition for joining the executive management team during the interview stage with a new potential employer.

"Your chance to get a seat on the operating committee is during the job interview," says Pettibone. "It's your best bargaining time. If it's not known when you walk in the door, it may take a lot of effort to change once you've started working."

And while most CIOs polled by *Computerworld* named reporting to the CEO as their first choice, not everyone was downbeat about not reporting to the top executive.

John Carrow, a CIO who reports to the CFO at Blue Bell, Pa.-based Unisys Corp., says that relationship provides greater insight into budgetary issues and additional focus on the bottom line. "One of the CIO's primary responsibilities is to continually focus on reducing the cost of running the business," says Carrow. "The only reason to implement new technology is to increase revenue, improve the customer's experience or to lower the cost of operations."

Regardless of where the CIO ends up within an organization, Weick advises forging a close working relationship with the CFO. "Any reporting relationship can work if the individual is a good communicator," he says.

CIOs who report to a CFO should request the latitude to reach out to other parts of the business to help prioritize IT spending, suggests Bell.

Along those lines, Pettibone, formerly CIO at New York-based Philip Morris International Inc., adds: "Things are improving because CEOs realize that IT is a key ingredient to business. But what's most important is the individual, more so than a role or title." ◗

Making Nice to Your CFO

Most CIOs told *Computerworld* that they'd prefer a direct line to the CEO, but the top IT post at many firms reports to the CFO. Here are some tips on making the best of that relationship:

■ **Negotiate a seat** on the operating committee or an executive committee.

■ **Forge a strong relationship with the CFO.** It could later aid in getting funding for IT projects.

■ **Request the latitude to meet with different departments** to get a better understanding of how IT spending should be prioritized.

■ **Hone your communications skills** to effectively communicate with and educate the CFO on the strategic importance of IT to your organization.

■ **Show real-world positive examples of strategic projects** already under way in your industry whenever possible.

■ **Keep an eye on implementing IT cost reductions** when warranted, so your CFO won't have to usurp that duty.

■ **Develop good measures** to demonstrate that there's a strong return on investment for IT expenditures.

■ **Align IT projects with the CEO's vision** for the company.

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Online community managers are the **most important link** between a Web site and its audience. But the **non-IT background** of many such managers make them a challenge for an IT manager to oversee. **By Minda Zetlin**

EACH MORNING before leaving for work, Ann Lombardo, community director at New York-based WeightWatchers.com Inc., signs on to the site and spends a few minutes reading the previous evening's posts to its public forums.

"I look to make sure people are adhering to the site's terms and conditions," she says. "We want to make sure it's a safe environment for everyone. Then I hear from my boosters [part-time employees who monitor the forums] and see if they've encountered specific problems."

Lombardo also mines this user-generated content for ideas for articles that could run on the site.

"They might start asking each other, 'What do I do when I reach my goal weight?' So when I meet with the content team about articles, I can suggest that as an article they could put up that would be of interest to users," Lombardo says. "By the time I get to work, I have a list of things I want to look into."

They may be known as community managers, community directors or even community producers. But whatever they're called, online community specialists oversee the community portions of their Web sites — in other words, anywhere on the site where there is human-to-human interaction.

Community activity can take the form of message boards, live chat, special chat events or customer reviews. Like Lombardo, community managers may oversee staffs of remote, part-time chat hosts and message board moderators. Or they may work with volunteers or be responsible for reading user messages themselves.

More than anyone else, community professionals have a finger on the pulse of their sites. They're usually the first to recognize user concerns, preferences and dislikes. And for this reason, they're often involved in sitewide planning efforts, new product launches and redesigns. Most report that their workdays fall well outside the usual 9-to-5 parameters.

"Even on weekends, I do a walk-through every morning," says Kate Leighton, director of community development for My1-to-1.org, an information-exchange site for fundraising officers at nonprofit organizations. "The Net is 24/7, and it's not unusual to get a phone call at 11 p.m. from a message board moderator who's encountered a problem."

On the other hand, because so much of the work takes place online, these jobs are highly suitable for nontraditional work arrangements, such as telecommuting, flextime and part-time schedules. For example, although My1-to-1.org is located in Washington, Leighton does her job from her home office in Ed-

Creators of ONLINE Community

How to Cash In

Online community manager is such a new job that there are very few places to learn how it's done. The best teacher is experience, actually working and spending time in online communities. How can aspiring community workers get started in the industry?
By Bill Pfleging

1 **Get Involved.**
Begin by immersing yourself in various online communities. Be an online participant, chatting and posting to message boards. Make sure that you're comfortable communicating online – and that you're good at it. I always hold my first interview with a prospective community staff member in a chat room to see how that person comes across online.

2 **Get Experience.**
As in many professions, there's a catch: To get a community job, you have to have experience working in a community. Fortunately, in this field, there are many opportunities to volunteer, which can give you the experience you need. I tell people they should volunteer in an online community for at least six months to a year before seeking a paid position. The job entails far more than just being a good "chatter."

monton, Alberta. She earns an hourly fee and works more than full time some weeks, less than full time others, depending on what's happening on the site.

Community managers vary widely in background. Lombardo, for example, started out as a member of Weight Watchers. Once she reached her goal weight, she became a meeting leader for the company.

On her own initiative, Lombardo began an e-mail listserv for her members. She was the perfect candidate when the site needed a new community manager because she had already mastered the intricacies of how people communicate online.

On the other hand, Lombardo acknowledges that she knew next to nothing about technology. "I didn't know a nav bar from a bread crumb. A server was something you put hors d'oeuvres on," she says.

The Weight Watchers online community works, she explains, because she gets excellent technical support from the Weight Watchers IT team.

Other community managers, like Leighton, became community experts first (usually by volunteering and working part time online), then found jobs where those skills would be recognized and paid for.

In many cases, the most active members of an online community (that is, those who post frequently, get involved in chats and tend to answer lots of questions for less experienced community members) evolve naturally into paid community professionals.

However they get there, successful community managers must have good people skills, say industry experts. They also must be very comfortable — and highly proficient — at communicating in the online environment.

Since being a community manager is a high-touch, people-oriented profession, supervising these people can be a challenge for a traditional IT manager. Many organizations recognize this by having the community manager report to a vice president of, say, product development or marketing.

IT managers who do find themselves in charge of a community professional or team should hire someone with demonstrated community skills and work with that person to set objective goals — such as growth in the number of registered members, for instance.

Community experts add that a good community manager also needs to have a solid understanding of the technology that makes message boards and chats work. "You don't need to be a programmer, but you do need to understand what programmers' constraints are and be able to brainstorm with them," says Anne-Marie DiNardo, community producer at

I didn't know a nav bar from a bread crumb.

ANN LOMBARDO, COMMUNITY DIRECTOR, WEIGHTWATCHERS.COM

C-SPAN in Washington. "Another skill you need is information management. A lot of information is available. How do you organize and present it so the result is something people can use easily?"

As with many high-tech professions, it also helps to have some business knowledge. More and more corporate leaders are evaluating each area of their Web sites, including communities, in return-on-investment terms.

"[This year] is a lot different from 1997," notes Anne McKay, community manager at Yonkers, N.Y.-based ConsumerReports.org, the Web-based counterpart to *Consumer Reports* magazine. "Now it's important to have some business training."

Community managers promoted from within can often bring a deeper understanding of the business than those hired from the outside. However, they may lack expertise in community management. On the other hand, a seasoned community professional from the outside can bring community management skills but may lack familiarity with the business. That's why it's often a good idea to hire site users who have demonstrated proficiency at using message boards and chat — they bring a combination of community skills and familiarity with the product.

Because the profession is so new, there's no such thing as a typical community manager salary, and most experts shy away from giving a specific range. Figures that were discussed for this article ranged from $50,000 to $150,000, and perhaps more for a really high-profile site.

Like all Internet professionals, online community specialists have faced layoffs, cutbacks and a contracting job market in the past several months. But the long-term prospects for the profession are excellent according to several industry observers.

"We're predicting that by 2005, more than half of all Fortune 1,000 companies will have launched communities," says Brian Smith, research director at Gartner G2 in San Jose, a unit of Stamford, Conn.-based Gartner Inc.

Jim Cashel, editor of the online industry newsletter "Online Community Reports," says that, while advertising-supported communities are cutting back, new online communities for internal or business-to-business sites are being launched every week.

What are the advancement paths from the community manager's job? Some people may be promoted to management positions in marketing, but most are likeliest to see their responsibilities expand if the community itself grows, bringing new offerings, greater management attention and an expanded staff.

Other than that, community managers can move up by going to a different employer with a larger community, or over to the vendor side, where software and consulting firms need community experts.

But most community managers say they were drawn to the job not because of the potential for advancement but because they find working with people online enjoyable.

"I feel like I could do this forever," McKay says. "I think I have more fun here than anybody. Every day when I come in, it's as though there are 25 people in my office waiting to tell me something interesting." ▶

Zetlin is a freelance writer in Woodstock, N.Y.

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3 **Get Training.** There are few formal classes, but you can get most of the training you need on the job. Be sure to volunteer at a site where they will train you. Although some of your training will be specific to that site, most of what you learn will be useful in all online community settings. If possible, volunteer at more than one site at a time to get a wider perspective.

4 **Get a Job.** The next step is to go hunting for a part-time community job. Most of these can be scheduled to fit into your spare time. Two good sites to find out about openings are CommunityManager.net and OnlineCommunityReport.com, where you can also network with people in the industry. Once people get to know you, they'll be more likely to hire you.

5 **Get Inside.** Once you're working part time as a chat host or message board moderator, make yourself available to take on more. Spending time in responsible roles like shift coordinator or chat scheduler will give you better access to the in-house managers and give you insight into what it takes to run a community. This will also make you more noticeable when a better job opening occurs.

Pfleging is the CEO of CommunitySeed.com Internet Consulting in Kingston, N.Y., which specializes in creating and managing online communities. He has more than a decade of work experience in online communities. He was formerly director of community at the Lycos Network and the alternative health site OneBody.com.

Dear Career Adviser:

I have a master's degree in information science and a Ph.D. in economics. I also have three years of experience at IBM's Pittsburgh lab working on WebSphere. My duties involve code debugging, building and testing. I'm familiar with Unix platforms, Windows 2000 and Windows NT, coding in Java, C and C++, Perl, and Unix shell scripts.

I would like to work in Boston or New York, moving from systems to application programming, and combine my economics and computer software backgrounds. What are my chances for landing a job?

— Lab Economist

Dear Lab:

Unfortunately, you have two big hurdles to overcome, notes Mark Dinowitz, president of The Edgewater Group Inc., a recruiting firm in New York. One is the current weakness of the financial services marketplace in New York and Boston. The second involves moving from a lab into the commercial world.

Were market conditions better, counsels Dinowitz, companies might hire you for application programming work, depending on the strength of your Unix, C++ and Perl skills. Even so, that would require at least two years' experience working on financial-related projects, including work on enterprise-level applications or an electronic trading system.

Considering the market and your skill set, your best move might be to stay put, at least for now. In the meantime, take courses that will help you move over to the financial applications world.

Dear Career Adviser:

I have seven years of progressively responsible IT experience, moving from human resources management systems to five years of Lotus Notes/Domino development experience. My SQL skills are good, and I have more than five years of solid hands-on experience with Access, SQL Server, Oracle and Crystal Reports development. I would like to get out of the groupware business and move into business intelligence and online analytical processing. How do I do it?

— Next Moves

Dear Next:

In this weaker market, employers will be looking for closer matches to their job vacancies and skill requirements, says Sastry Nanduri, vice president of engineering at OneChannel.net Inc., a Mountain View, Calif.-based company that provides business intelligence software for sales and inventory management. Therefore, making this move will depend on the strength of your development languages, your SQL knowledge and your exposure to data warehousing and other related technologies.

With your technical skills being on the lighter side, you might still get work as a business analyst. This requires database skills plus a good knowledge of business processes to enable a business to evaluate and select the appropriate tools and applications for its requirements. In this role, you should enhance your knowledge of the various business intelligence tools and technologies that are available, such as Business Objects, MicroStrategy, Cognos, Brio and Essbase.

With programming skills, scripting experience and strong SQL experience, you might find work as an implementation specialist at a business intelligence tool or application vendor. There, you will need to understand source systems and reporting needs and be able to write queries extracting relevant data. From there, you could possibly move into product development.

Since business intelligence is supported by extract, transform and load (ETL) tools and data warehousing, bolster your candidacy by getting trained in ETL applications such as Informatica.

Dear Career Adviser:

I'm an experienced software recruiter who's out of work. I have excellent Web knowledge, understand candidate sourcing and have in-depth experience with résumé management systems. Is this the right background to sell myself into a company in a human resources support role?

— Temp to Perm

Dear Perm:

If you have worked inside a company and understand the end-to-end systems that support the hiring function, your strategy might work. However, you'll need to know more than just résumé databases and Internet sourcing.

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/career_adviser.

SAP AG, Oracle Corp. and PeopleSoft Inc. all have major end-to-end human resource management systems (HRMS). These capture all the data elements regarding the total hiring process, from opening a requisition for a new position, posting the job and interviewing candidates to filling the position and bringing the candidate on board as an employee.

Obviously, becoming a PeopleSoft HRMS programmer requires a background in Java, C, C++ and HTML, plus five to 10 years' experience in the functional side of human resources, says Shelley Olson, vice president of PeopleSoft University.

But if you have a good background in recruiting, job posting, résumé retrieval and database systems, which are at the front end of the employment process, you might take a one-day HRMS overview and some specific module courses that will let you contribute to a true HRMS implementation.

On-demand courses cover specific modules on payroll, compensation and benefits administration. Or there are tools foundation courses where you can learn about transactional tables, the migration of data from a résumé management system into an HRMS, and data-mover scripts. Specific course work may include benefits administration, payroll, training and competency management, or, alternatively, you can take courses that show you how to integrate two different systems and understand the data elements you will need to map against the PeopleSoft system.

On-demand PeopleSoft courses cost $100 to $500 per course and can be found at *http://knowledgecenter. peoplesoft.com*. If you're truly interested in working internally, this added knowledge should be a plus. ▶

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WORKSTYLES

Restoring IT in an Upside-down World

What happened in IT on Sept. 11? "We were all evacuated and part of the mass exodus out of New York. My office was on the 34th floor of our building, and the evacuation process was pretty scary. There were so many people in the street, and many of us had friends or relatives in the World Trade Center.

"[In the days that followed], the next step was making sure we had our mission-critical systems back up and running. In a way, it was a blessing to have so much work to concentrate on rather than sitting at home watching [coverage on] TV.

"Fortunately, Merrill has made a commitment to teleworking, so a lot of people could get started at home, and we had alternate data centers, so many of our systems were unaffected. But we did have data centers that we had to replace. So we've been executing our contingency and recovery plans. Some of the technology that supports our corporate functions was in our headquarters, so we've had to re-establish the technology elsewhere."

What were the IT priorities? "The clear focus was being ready to support trading when the stock exchange reopened, and there was a lot of teamwork by another IT group to set up the trading center in Jersey City [in New Jersey]. In corporate technology, we were focused on the financial systems and treasury systems — the banking and funds-transfer systems."

When do you expect IT to return to business as usual? "We expect to be back in our building by November. From a technology perspective, one big question is how damaged our systems may be and what we need to do in terms of insurance claims. We're in very good shape with the way our systems are running today. So it's really just a question of how much processing we can move back into the building. Those are the questions we're starting to address, plus network connectivity questions.

"We're a global organization, and we'll continue to operate that way, but an additional level of sensitivity is required. You come into Grand Central in the mornings, and it seems like business as usual. But then you go to lower Manhattan, and it's not. And as a country, it's not business as usual when we're bombing Afghanistan.

"In terms of our employees' lives, we're not sure what the full implications are, and we're trying to be sensitive to the human side of this. As a manager, it's challenging to figure out how to lead in this environment. There has been an incredible sense of camaraderie. It has been a bonding time for the company."

Looking forward, what are the major initiatives? "In general, this has been a tough year for Wall Street, and we've been very selective about the discretionary projects we're working on. We'll continue to work on the installation of Oracle11i as our financials platform. And we're working on [Web-based] self-service HR applications and a single point of access for [employee information]. But the focus now really is on ensuring that we're stable and prepared for year-end."

Workday: "The first couple of weeks [after Sept. 11] were fairly intense. We were working very long hours, and some people were working 24/7. People are getting a little more sleep these days. We're working in shifts of 10 to 12 hours so we have 24-hour coverage, but we're trying not to burn out our resources."

Dress code: "We went to business casual about a year ago, except in the branch offices where there's a lot of client contact. But lately, *casual* has taken on a new meaning, with people sleeping in their clothes."

Security badge/card needed to get into buildings or offices? "Absolutely. We always had fairly strong security, but there's certainly a higher degree of security now."

Merrill Lynch & Co.

Interviewee: Jill Mullen, first vice president and chief technology officer, corporate technology group

Main location: Normally in the World Financial Center in New York, across the street from the site of the World Trade Center. But since the attacks on Sept. 11, "[we've been] operating from an alternate data center in lower Manhattan, and we have IT facilities in various places in the tri-state area."

Number of IT employees: About 600 in the corporate technology group; about 6,000 worldwide.

Number of employees (end users): 68,000 worldwide; the corporate technology group supports about 8,500 employees in the finance, corporate services, treasury, human resources, legal and marketing/communications areas.

Would employees feel comfortable e-mailing the CEO, Dave Klamansky? "Absolutely. He's very approachable, and he answers all the e-mail he gets. In the days after the attack, he used telemarketing technology to leave employees messages at their homes. I thought that was personal and effective."

The last word: "Situations like these bring out the best and the worst in people, and in the past month, I've seen the best at Merrill Lynch. It has been incredible to watch everyone support each other and get the job done, and I'm proud to be among them. It's a good place to be, in spite of all that we're facing. It feels like family."

– Leslie Jaye Goff
goff@ix.netcom.com

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TECHNOLOGY

NICHOLAS PETRELEY

Future of the Data Center

I RECENTLY SPENT SOME TIME CHATTING with Tim Witham, director of the Open Source Development Lab (OSDL), about the lab's new scalable test platform. Here's the idea in a nutshell: Some Linux kernel developers have two- or perhaps even four-processor machines, but I'm not aware of any who have anything more sophisticated on which to test their changes. The OSDL provides the answer. If someone wants to see how the latest patches to the Linux kernel work on a 16-way Intel machine, he can point his browser to the OSDL Web site, upload his software and schedule a benchmark run.

In most cases, the test results will be published for anyone to see, so the information is not only useful to the kernel developers, but the rest of us can also follow along.

I was disappointed to learn that the lab isn't outfitted with any big iron such as an IBM OS/390, a 64-processor enterprise-scale Sun server or some other such box. I was under the impression that this was one of the points of creating the lab in the first place. Witham wouldn't rule out the possibility of adding such machines in the future, but right now, the lab is only tricked out with multiprocessor Intel boxes.

Witham argues that if IBM is concerned about how well Linux runs on an OS/390, it can afford to tune Linux using internal resources rather than burden the lab with that responsibility.

In the end, I left the meeting more impressed with Witham and his vision than with any of the information regarding the lab.

For one thing, Witham is a solid systems guy whose experience includes everything from heavy-duty, real-world benchmarking to electronics engineering. He's exactly the type of person the OSDL needs at the helm, because he understands the need to simulate a real-world environment for the benchmark tests.

What impressed me most was his long-term outlook for Linux. Witham is convinced that Linux will own the data center in about five years. I happen to agree with the reasons on which he bases this conclusion. I'll try to paraphrase them here, with some of my own embellishments.

It all comes down to control. Once upon a time, companies got most of their software and hardware from a single vendor, usually IBM. A systems administrator could get software or hardware problems fixed by calling the vendor and saying,

"Hey, I paid $5 million for this system. I need this problem fixed immediately, or else the next time I need to spend $5 million on a computer system, I'll take my money elsewhere." More often than not, the vendor responded immediately.

You can still throw your weight around to get what you want if you're a big enough company, but now, the way to get what you want is through choice. If Dell doesn't come through, there's always Gateway.

These choices are possible in the PC world because the PC is basically an open hardware platform. Software is an entirely different story. Windows is a closed platform. So where do you go if you have a problem with Windows? In most cases, Microsoft forces hardware resellers to support Windows if they want to preload it on their systems. So if you want help, you have to call the company that sold you your computers. If you have enough money, you may be able to get Microsoft's attention but not enough to control your future.

That's because Microsoft is hard at work shifting its customers to a software subscription model in which customers pay for upgrades whether they want them or not. And don't think you can circumvent this scheme, because Microsoft will simply decertify those who have been trained on last year's operating system, rendering last year's software unsupportable.

(Microsoft recently extended the expiration date for MCSE certification on Windows NT, but not before the company revealed how it intends to force you to upgrade on its own terms.)

Linux doesn't guarantee that you'll have a company to call when you have problems, but it provides two things that are better. First, an army of potential entry-level employees called computer science majors who are about to graduate, and almost all of them know and love Linux.

But that advantage is trivial compared with what Linux itself gives you — the source code and the right to modify it as you see fit. This takes control over your future out of Microsoft's hands and puts it back where it belongs — in yours. ▶

NICHOLAS PETRELEY is a computer consultant and author in Hayward, Calif. He can be reached at nicholas@petreley.com.

Big Blue is making a big commitment to Linux across its product line. But will users bite?
By Mark Hall

I F IBM GETS ITS WAY, users will soon be thinking about operating systems the way investors view pork bellies: as mere commodities. The instrument the company will use to make this sea change in IT? Linux.

The implications of IBM's strategy for corporate IT planners are enormous. It affects everything from in-house development projects to server deployments. And the impact on IBM's competitors could be even more dramatic, say analysts and users.

Enterprise IT managers contemplating a move to Linux say they have much at stake. "We're putting 700 users on a mail system on top of Linux," says Dave Ennen, technical support manager at Winnebago Industries Inc. in Forest City, Iowa. "It's mission-critical."

Ennen's company is in the midst of a major server consolidation effort, taking advantage of Dallas-based Bynari Inc.'s InsightServer groupware application for Linux on an IBM zSeries mainframe. Ennen says the move eliminates the need for 40 Intel-based Windows servers that would have had to be upgraded to Microsoft Exchange and would have required a half-dozen support staff "instead of one or two for the mainframe."

Winnebago, a maker of motor homes and RVs, will run nine or 10 instances of Linux with InsightServer under IBM's virtual machine environment, which permits multiple operating systems to be managed on one system.

That's a big shift within IT away from having scads of Windows servers, but it's also a big hit on the competition. Not only would those 40 servers have run Exchange, but they also would have used Microsoft Windows 2000 Server and SQL Server software. Instead, the corporate e-mail application is running on an all-Big-Blue system.

"Microsoft has caused a lot of grief to IBM over the years. IBM sees Linux as a way to free itself from paying

COLIN JOHNSON

IBM Roils Linux Waters

EVOLUTION OF IBM'S OPEN-SOURCE STRATEGY

1998				1999			

August 1998:
IBM announces that its WebSphere e-business software will be based on the open-source Apache Web server application.

October 1998:
Scientists at IBM's Academy of Technology recommend that top management review Linux's impact on the industry. Executives approve a formal study.

December 1998:
A skunk-works project inside IBM's labs in Germany results in Linux code running on the System/390.

May 1999:
IBM announces DB2 database support for Linux.

August 1999:
Launches open-source development team of five programmers.

November 1999:
Announces port of Lotus Domino to Linux.

January 2000:
Begins work on Linux journal file system, its first major official open-source project.

homage to Microsoft," says Al Gillen, an analyst at Framingham, Mass.-based IDC.

To be successful in the long run, however, IBM must assuage the skeptics regarding its new role as a contributor in the open-source community that wants to nurture Linux. And, more important, it must give Linux the enterprise-class capabilities IT managers expect from a data-center operating system.

TOP-DOWN APPROACH

As recently as 1998, IBM had no plans to become a provider of Linux-based products. In August of that year, it shipped the WebSphere Application Server, which runs on the open-source Apache Web server and Linux. It also launched an internal study on Linux's role in the IT industry.

IBM's first Linux technology came in December 1998 from an unsanctioned effort by IBM programmers in Germany, who ported the Linux kernel to the System/390 (now the zSeries mainframe) in their spare time, according to Dan Frye, director of the IBM Linux Technology Center.

Since then, the company has released Linux as an optional operating system on all of its servers. It now runs everything from IBM's DB2 and Domino Notes server software to encryption coprocessors and Tivoli Systems Inc.'s management utilities.

IBM's vice president of Linux, Steve Solazzo, says that what makes Winnebago and other companies choose Linux is that "it turns the operating system into a commodity that can run on any hardware."

This argument has increasing appeal to both independent software vendors like Bynari and users such as Gerry Sztabnik, director of middleware operations at the Security Industry Automation Corp. (SIAC) in New York.

Sztabnik recently completed porting SIAC's brokerage notification application from a Sun Solaris environment to Linux on IBM hardware in two and a half days. Because Linux is Unix at its core, Sztabnik says, porting code from Solaris to Linux is a snap. The underlying C code doesn't need to be modified, and most of the work entails recompiling on new hardware, in his case an IBM zSeries mainframe.

Had Winnebago opted for Exchange on Windows or had SIAC stuck with Solaris, they would have had only one hardware choice on which to run their applications in the future. But with IBM's full product line supporting Linux, IT managers can move their programs from low-end Intel servers to midrange systems or mainframes.

What's more, Sztabnik says, broader industry acceptance of Linux means that SIAC isn't even dependent on IBM as its sole system supplier. For example, both Hewlett-Packard Co. and Compaq Computer Corp. back Linux on their RISC and Intel servers.

As Winnebago's Ennen observes, "If we decided to move the Bynari app off the mainframe, we can do it."

In fact, that's what Paul Watkins did — in reverse. The network analyst at Newell Rubbermaid Inc. in Freeport, Ill., initially used his open-source multirouter traffic grapher perfor-

What's At Stake?

IBM is making significant investments in Linux – **more than $1 billion this year alone**, says Steve Solazzo, the company's vice president of Linux – and that amount will grow in 2002. IBM has **more than 250 developers working full time** on Linux and open-source projects and has **thousands of employees,** from sales to Global Services, trained on the operating system. Solazzo says Linux "is a **game-changer**. It will change the balance of power in the industry."

mance-management tool on a low-end Intel server. But when it didn't give him the response time he needed, he moved it over to the company's System/390 running Linux.

"Now it just flies," Watkins says.

COMMUNITY ISSUES

As the crown prince of proprietary operating systems, IBM still faces skeptics among open-source developers, says Michael Tiemann, chief technology officer at Red Hat Inc., which supports many of IBM's Linux efforts.

And the competition is even less trusting. "Yes, they do want to commoditize the operating system," says Andy Ingram, vice president of Solaris at Sun Microsystems Inc. "They want to reduce the operating system to the lowest common denominator because that will drive more integration work for their Global Services division."

At Microsoft Corp., doubts go beyond IBM to Linux itself. Doug Miller, director of competitive strategy for the software giant, says he thinks Linux isn't a long-term bet for the data center. "I just don't see it taking over the world," he says.

Miller argues that IT doesn't buy servers and operating systems but rather business applications, which are predominately on Windows.

IBM is well aware of that skepticism and the current lack of data-center-specific software and services, acknowledges distinguished engineer Sheila Harnet, who works on Linux full-time at IBM.

Harnet says she thinks IBM has carefully picked domains where it could credibly contribute to making Linux a stronger enterprise operating system, such as in scalability, print services, file systems, volume management, serviceability and other high-end areas.

And that approach makes sense to IT professionals because, as Ennen puts it, "IBM puts some beef behind Linux." ▶

2000 · **2001**

March 2000: Team releases its first contributions, Linux drivers for Token Ring.

July 2000: IBM announces $200 million Linux development program for Europe.

July 2000: Makes Linux-based BlueDrekar middleware code available for the Bluetooth wireless specification.

August 2000: Launches $200 million Linux development program for Asia-Pacific. Signs distribution deal with Red Hat.

January 2001: Announces that it will invest $300 million in Linux-based e-business services.

March 2001: Announces a broad range of storage products and services using Linux, including Shark-class storage systems on the z900, Modular Storage Server for midrange systems and Ultrium tape backup systems.

May 2001: Releases Linux for its iSeries midrange servers.

August 2001: Ships high-performance cryptographic coprocessor for Linux; unveils broader support for Linux in Tivoli security and Web management software.

FOR MANY ENTERPRISE computing systems and applications, downtime isn't an option. For emergency-response organizations, lost time can mean lost lives. In the business world, lost opportunities to take action can mean lost revenue.

And the IT people who must keep computers working in environments like those need special hardware and software, especially if they're running Windows-based applications.

Most of the transaction processing at retail payment processor Lynk Systems Inc. moves through high-end, proprietary fault-tolerant systems from Stratus Technologies Inc. The applications, written in Cobol, work well with Stratus' proprietary Virtual Operating System (VOS). Downtime — even a few minutes — isn't acceptable. "If [the systems] go down, our merchants go down," says Carl Cliche, vice president of support systems at Atlanta-based Lynk. But when the need for a new transaction processing application requiring a Web interface resulted in a design using SQL Server 7 on Windows NT, availability became a major issue.

Despite all the advertising hype about "five nines," or 99.999% uptime on Windows servers, a new server cluster fell short of expectations. "We've had big problems with clustering technolo-gy," Cliche says, citing fail-over problems and the need for special cluster-aware applications and scripting. "It was all terribly complicated."

So he moved the application to Maynard, Mass.-based Stratus' ftServer 5200, a fault-tolerant system that brings continuous computing technology to Windows 2000 Advanced Server as an alternative to clustering. The ftServer supports up to four hot-pluggable Intel Corp. Pentium III or Xeon processors and splits I/O and compute processing functions into separate, redundant modules that run in lock step to provide uninterrupted computing in the event of a hardware failure. The ftServer sheds Stratus' proprietary VOS — and the typical six-figure price of the high-end systems.

"It looks like a normal NT server. You can use the standard software, the applications don't have any special requirements and it's much easier to manage [than a cluster]," Cliche says.

Continuous computing systems for Windows could be the beginning of a new trend. The market for high-avail-ability systems is growing fast. Sales are expected to jump from $52.5 billion this year to $84.2 billion in 2005 — an 18.4% compound annual growth rate, according to market research firm Harvard Research Group Inc. (HRG) in Cambridge, Mass.

In addition, the need for Web-enabled interfaces to critical back-end systems and the increasing importance of Windows-based applications, such as databases and e-mail used for transactions, may drive demand for this new class of Windows-based fault-tolerant computing. "Today, where people exchange purchase orders and documents using e-mail, it's understandable that you would have a requirement for high levels of availability," says Bob Besautelf, an analyst at HRG.

These continuous computing systems were previously available only on high-end systems like Compaq Computer Corp.'s Himalaya and Stratus' Continuum, which use proprietary hardware and operating systems that can cost from about $70,000 to millions. By contrast, Windows-based systems from Stratus and Boxborough, Mass.-based Marathon Technologies Corp. start at about $20,000, making them an attractive alternative to clustering.

The applications that are most in need of this type of hardware are those that can't tolerate the short downtime involved in a cluster fail-over or where organizations lack on-site expertise to manage a server cluster. For example, the San Diego Fire Department's 911 software tracks the locations of emergency vehicles and automatically dispatches the nearest vehicle to a call. Here, the two minutes required for system fail-over is unacceptable. "Two minutes in the life of someone having a heart attack could be their life span," says Doug Bolton, an information systems analyst at the department. The department installed a Stratus system which cost about $100,000. Installation and setup required about 20 hours — substantially less time than it took to set up the previous clustered system, Bolton says.

For InSight Telecommunications Corp. in Boston, which provides satellite and fiber-optic capacity to broadcasters, the issue is one of maintaining business relationships. InSight relies on its software for resource scheduling

High-Availability Market

from

$52.5B

in 2001

to

$84.2B

in 2005

HARVARD RESEARCH GROUP INC., CAMBRIDGE MASS.

Continuous computing systems offer an alternative to clustering for Windows-based servers that require high availability. By Robert L. Mitchell

No-Fault WINDOWS

TECHNOLOGY

Three Fault-Tolerant Architectures

In a **WINDOWS SERVER CLUSTER,** the primary system handles all processing, while the fail-over system remains on standby (in an active-active cluster, the standby server may be used to perform other work until needed). The cluster software uses a dedicated "heartbeat" connection between the machines to monitor operations and initiate a fail-over. Devices may share a common SCSI bus for access to redundant storage arrays. When a failure occurs, processing stops while the fail-over system boots the applications and comes online. The typical fail-over time may be two minutes or longer.
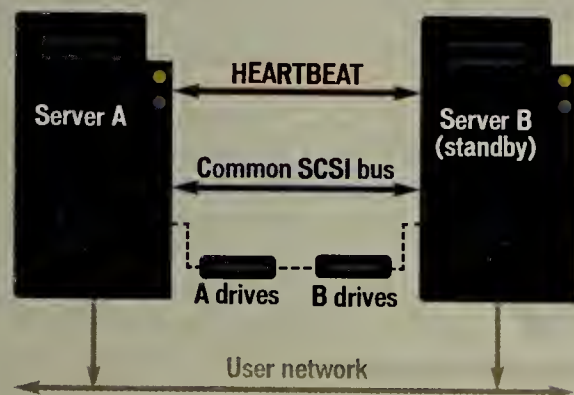
MARATHON'S ASSURED AVAILABILITY ARCHITECTURE uses a special PCI card and software that interconnects four servers – two functioning as compute processors and two as I/O processors – over a high-speed bus. Special software and connections allow the systems to run processes in parallel. During a failure, the backup server takes over without an interruption.
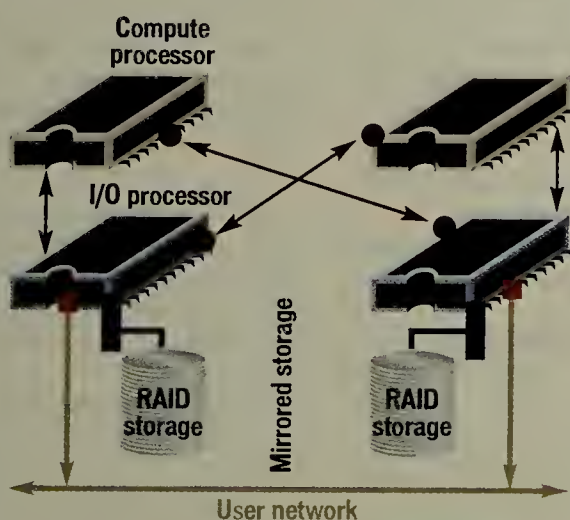
STRATUS' FTSERVER DUAL-MODE SYSTEM ARCHITECTURE includes two compute processor modules and two I/O modules in a single server enclosure. A special embedded application-specific integrated circuit connects the modules via a proprietary high-speed backplane. All processes run in parallel for uninterrupted operation during a failure. An optional third processor module maintains fault tolerance in the event of a single processor module failure.
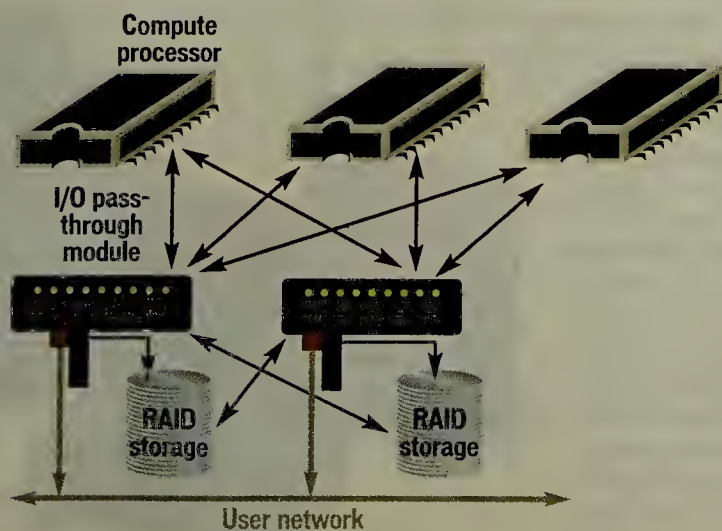
and management. Broadcast networks need immediate answers and won't wait while a server reboots, says CEO Keith Buckley. "If NBC News calls and we can't provide the service, they're not going to call again," he says.

InSight uses Dell Computer Corp. PowerEdge servers with Marathon's Endurance fault-tolerant Peripheral Component Interconnect (PCI) card and software. While Stratus sells a complete, integrated system, Marathon's technology requires four off-the-shelf servers — two functioning as compute processors and two as I/O processors — operating in lock step over a dedicated high-speed connection. Marathon relies on a network of resellers to integrate the systems and supports servers from IBM, Hewlett-Packard Co., Compaq and Dell. "The fact that Marathon gave us the opportunity to spec which hardware we wanted was important to us," Buckley says. The tab: just less than $75,000, including $45,800 for the Dell hardware.

Hidden Costs

Marathon and Stratus claim that the total cost of ownership of these systems is less than that of clustered systems, but analysts say IT managers should do their own math. Both vendors cite the expense of cluster-aware software, scripting, fail-over testing, staff training and maintenance costs as reasons to purchase their systems rather than a cluster. Both also have arrangements with Microsoft requiring only one Windows or Exchange Server license per system. For other software, IT managers may have to negotiate terms.

Costs for a fully implemented system can go well beyond the $20,000 to $30,000 starting prices. And Stratus' systems typically include a monitoring service contract that adds up to about 20% of the initial system cost annually. "We're used to that with our mainframe Stratus," says Cliche. In the commodity Windows server market, however, others may opt out, analysts say.

Donna Scott, an analyst at Stamford, Conn.-based Gartner Inc., says that on systems such as Exchange Server 2000 that support active-active clustering, the backup system can be performing other tasks until a failure occurs. That's something you can't do on a continuous computing architecture. "Let's face it, nobody likes idle resources," she says.

While the technology isn't new, its implementation on Windows is still evolving. The San Diego Fire Department has had two failures since installing Stratus' system in June, when the product first shipped. One in-

volved a programmable read-only memory flash update; the other required a firmware replacement. Each time, however, the system continued without interruption. Marathon's product has been available on Windows NT Server since 1997, but with some 1,700 system sales, it's still a very small niche in the high-availability server market.

Although these systems run Windows, the hardware architecture is still proprietary. Stratus implements its own Windows hardware abstraction layer in its ftServers and supports only adapters for which Stratus-hardened device drivers are available. "You can't just pop an extra PCI card in here and there," says Cliche. But Bolton says the trade-off is worthwhile. "By insisting on hardening drivers, I think they're overcoming a lot of the issues that my peers are having with their implementations of Windows 2000," he says. Marathon relies on third-party integrators to choose system components.

While the Stratus and Marathon systems offer their own management software, neither has a Simple Network Management Protocol Management Information Base for interoperation with enterprise network management tools; both firms say they're working on one.

Scalability is another limitation. Marathon's technology doesn't support symmetrical multiprocessing (SMP). Stratus' ftServer series offers a limited number of configurations with support for up to a four-processor SMP system. Still, "there's absolutely a place for fault-tolerant Windows systems, because they provide a special functionality that you can't get from a cluster today," says Scott.

"If you look at where these things are installed, it's in those sites where they don't have the infrastructure in place to take advantage of load-balancing and clustering across a front-tier or midtier architecture," says Tom Manter, an analyst at Aberdeen Group Inc. in Boston.

The best applications may be found where the costs of downtime are high, Scott says. "Enterprises always buy what's good enough," she says. And for many applications, a clustered system with a fail-over time measured in minutes may be all that's needed. But at least one user takes a different view. "If this thing works out, I'll look to put [ft-Servers] in for other [Windows] applications that don't currently run on fault-tolerant servers," says Cliche. ▶

The Traveler's Kit Bag, Part 2

Sometimes, the most important part of the kit bag is the bag itself. By Russell Kay

A S A PRODUCT REVIEWER, I've had the opportunity to use a variety of bags and carrying systems when I travel with a computer. Based on my experiences, I've come to two conclusions: There's no perfect bag, except perhaps momentarily, and there's also no need to suffer.

When I'm going to be away for just a day or two, I've often used the $399 ComputerCase from South Bend, Ind.-based Porter Case. At 13 pounds empty, it's heavy, but it has the easiest-rolling wheels of any case I've ever handled. It also opens up and doubles as a luggage cart on which you can stack other bags weighing up to a total of 200 pounds. Now Porter Case has a newer, smaller case, the 12-pound Elite, also $399,

Codi Mobile Lite $139▼

which is designed to fit under an airline seat. It still does double duty as a luggage cart. If I don't take the ComputerCase, then I go with the $199 Shuttle from Anaheim, Calif.-based Targus Inc. It's a no-nonsense wheeled case with lots of capacity (including a separate protective case for a laptop) and more zippers than almost anything else. Either case is small enough to serve as an airline carry-on.

For day-to-day commuting, I use one of three bags. First is the $139 Mobile Lite (Model No. 9020F) from Codi Inc. in Harrisburg, Pa. It's the smallest wheeled case I've tried, although similar cases are available from other makers. I especially appreciate its wheels when I have to take home three notebook computers at once, along with their accessories and documentation.

For more normal commuting, I generally opt for one of two more traditional shoulder bags: the Port 2.1 Commuter (70140) made by Anaheim, Calif.-based Targus Inc., or the Expandable from Brenthaven. The Expandable came to my attention about a year ago. The product of a small Bellingham, Wash., firm, it's one of the best-constructed bags I've ever encountered. Of course, at

Targus Sport Deluxe backpack $90▲

$325, it had better be well made! You're likely to find it only in luggage stores or online (*www.brenthaven.com*). The $99 Port is very nearly as well made, and it has the additional advantage of standing upright when I set it down; the Expandable always flops over on its side. Both bags come with very good shoulder straps and excellent handles, and both are made from exceptionally strong and long-wearing fabric.

On Your Back!

When I'm going to be on my feet a lot, such as at a trade show, I always use a backpack. I've had good luck with the Port BackPack (PR13440, $79) — too good, actually; on a visit last year, my son tried it and announced that he wasn't giving it back. More recently, I've been using the $139 MaxPak (7703F) from Codi. Both packs have served me well.

I recently received three new backpacks to try out. The first is Targus' $90 Sport Deluxe backpack, and I expect it to be my primary choice for tackling the giant Comdex trade show next month. Available in black and trimmed with

either blue or silver, it has very different styling, with pockets and zippers arranged in a unique way. The Sport Deluxe has enough outside pockets and loops that you can attach almost anything to it. My first impression of this backpack, just picking it up, was that it seemed heavy for its size. But when I put it on my back, that weight seemed to disappear. I suspect that's due to its semirigid curved plastic back brace.

The two backpack straps come standard with a chest strap and cell phone pouch, and there's a waist strap for further support. Criss-cross lacing helps secure a water bottle, and there's a rubber-handled grab loop on top. I don't like the rather odd vertical zipper covering the outside organizer panel. It doesn't open completely and seems different merely for the sake of being different, rather than for any practical reason.

The other two backpacks are from Brenthaven, the $350 Urban Backpack and the $295 Metro Backpack. The Urban is the more interesting of the two, with 40% greater capacity and a convertible strap system. The backpack straps unhook at the bottom and tuck away into a pocket at the back, while D-rings accommodate a normal shoulder strap. The Urban also has a much nicer and more comfortable grab handle at the top than the Metro, but there's a price for all those features and that capacity — it weighs 5 pounds when empty.

Both Brenthaven packs are of first-rate construction and materials. Whether they're worth the extra cost compared with the Codi, the Port or the Targus Sport is between you and your pocketbook. ▶
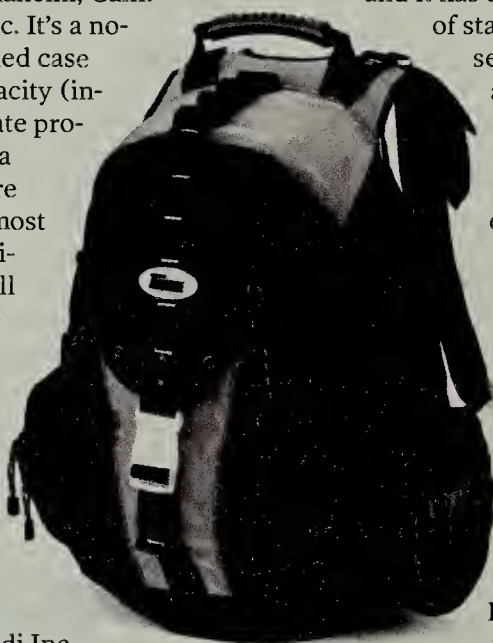
Porter Elite $399▶
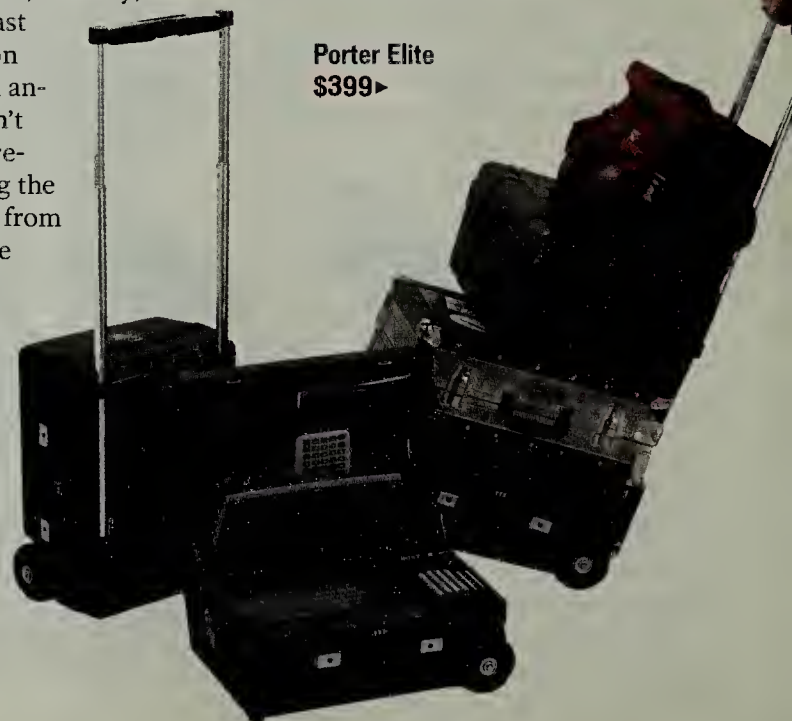
NUMBER OF PEOPLE
ON YOUR NETWORK

NUMBER OF PEOPLE
ON YOUR BACK

R E T U R N   O N   C O M M U N I C A T I O N S

Fact: The sales department has different needs than HR. Or manufacturing. Or customer service. And they all need to be on your network. But it's not enough to build a network just to run everyone's apps. You need one that'll do so without causing you massive headaches. And that will return your investment. Short and long term.

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AT&T

Why Computers Crash

DEFINITION

A **computer crash** occurs when the machine stops working and no longer responds to user input. On Windows machines, a crash is often accompanied by an error message known as the "blue screen of death." The cause of most crashes is usually a program trying to do something it shouldn't or the lack of available resources such as memory.

BY MICHAEL MEEHAN

IT'S SAFE TO SAY that anyone who's ever worked on a Windows system has seen the infamous "blue screen of death." This solid blue screen with white lettering tells you that the system has crashed and gives you a couple of options. If you're lucky, all you do is reboot and redo all the work you just lost. But you could find yourself dealing with major system corruption.

Simply put, the **blue screen of death** is just a serious error message, a sign that your computer has hung up due to an error. The Mac OS equivalent is a blank screen with a small text box containing a picture of a bomb with a lit fuse.

The upside of this unwelcome shutdown screen is that it contains some information about what caused the crash.

A "core dump" will often appear on the screen, with coded information from the system's RAM. It might provide information that helps you determine exactly what went wrong with your machine and prevent it from happening again — if you record the screen information.

An **infinite loop** is another of the many errors that can bring a computer to its knees.

A loop is a series of instructions that gets repeated until a specified condition is met. When that condition can't be met, the loop cycles endlessly and never quits or moves to the next part of the program.

Thrashing is another problem condition. Any computer has a finite amount of memory and processing capabilities. When a process or program (or, with respect to a server, a user) makes a request of the operating system that can't be met, the operating system borrows the necessary resources from another process. But then the borrowed-from process asks for resources, and the operating system has to find them somewhere else.

Eventually, the entire system is looking for help, and the computer user is looking at a stagnant or blue screen.

Consider what happens when several users need lots of resources at the same time.

Here, the operating system may give one process exclusive use of all its resources for a short period of time, then go and reallocate those to the next user, and so on.

When the system moves from one user to the next, however, it has to save everything the previous user was doing (such as data or the state of its processes) out to disk, which is relatively slow. Then it has to load again from a slow disk the next user's saved data and programs before any computing can resume.

Since intervals between changes or requests are measured in milliseconds, it's easy to see that just the overhead of changing users and reallocating resources can consume virtually all of the computer's time and capacity, so that little or no real work gets done.

Finally, there's the classic **fatal error.** There are certain commands that an ordinary user isn't allowed to issue. These typically have to do with the operation of the hardware, memory and processing of the machine.

Sometimes, however, a program steps into that forbidden area and, to protect itself, the machine shuts down. That way, when you reboot, every-

thing still works the way it should. Except for all the data you lost due to the shutdown.

Perhaps the best-liked feature of Windows 2000 has been its stability in the face of such errors, its ability to shut down just the offending process without forcing a reboot. ▶

Disks Crash, Too

There's another type of computer problem that's also called a crash, and it happens in hard disks.

Normally, the heads of a disk drive actually fly over the surface of the platters, never touching the magnetic media. But if there's a sudden physical shock – say you drop your laptop – the heads can touch the rapidly spinning platters. Such a disk crash (also called a head crash) usually causes a loss of data or program files and damage to both the platter and the head, inevitably necessitating a new drive.

– *Russell Kay*

Quick Link

The Deadly Embrace

Deadlock (which is sometimes called the **deadly embrace**) is another crippling condition. It occurs when two or more programs are each waiting for the others to complete – or even just to produce a data value – before proceeding.

The programs act like the overly congenial gophers in some Looney Tunes cartoons:

"Oh please, you first," says one.

"No no, I insist, you first," says the other. And nothing goes anywhere.

Generally, deadlock occurs in systems that run multiple tasks or in servers with multiple clients. Operating systems and middleware that queues messages have attempted to eradicate deadlock, but it still pops up now and then.

There's a historic reason why deadlock exists.

Early operating systems ran only one program at a time, and all of the resources in the system were automatically made available to that one program.

In order to run multiple programs at once, programmers figured out how to start fulfilling a program's needs without giving it the system's full resources. In midoperation, a program can request additional resources as it needs them. But if the resources it needs have already been grabbed by another program or programs, the result is deadlock.

Beyond operating systems, deadlock can occur in databases and Web browsers. Generally, deadlock happens less often in newer applications because new hierarchies for requests are able to skirt around the problem in many cases.

– *Michael Meehan*

CAMPBELL LAIRD

WORKERS OUT
OF THE OFFICE

WORKERS OUT
OF THE LOOP

Nimda Slips Through Best Corporate Defenses

When a protection failure allows the infamous virus
to invade, it's a software bug that saves the day

BY VINCE TUESDAY

AFTER A LONG WEEKEND, I was hoping for a nice, quiet day spent cleaning up my e-mail and planning my budgets for next year. Instead, I faced the Nimda worm. This delightful virus is like Code Red on steroids.

We could tell something was up early on, when thousands of remote sites started hitting our exterior firewalls, with many attempts to exploit Internet Information Server (IIS) vulnerabilities. Luckily, we don't run Microsoft Corp.'s IIS on our externally facing hosts.

But the Web-based attacks were followed by a huge increase in the number of e-mails held at our gateway. Because of the risk, we block all executable files and .vbs, .bat and .pif files. So despite not having the correct virus signature, we were able to defend ourselves.

We had seen this pattern before and were calm — almost blasé. Another day, another e-mail virus — although the simultaneous Code Red-style attack was a puzzling coincidence. We decided to have a quick glance at the antivirus and SANS Institute Web sites to get updated signatures and an analysis. Many sites reported that the worm had no payload and that they had signatures that could detect it.

Nimda Under the Microscope

The Nimda worm is really a dooropener for other malicious behavior. It adds an account called "guest" and gives it administrator privileges. It then makes your local drive public for the entire Internet. Because our internal systems are walled off from external connections, even if we were hit by Nimda, the impact would be fairly low

from this payload — or so we thought.

Nimda not only sends e-mails to everyone and probes for vulnerable IIS servers, but it also modifies the Web pages of the infected server so that they include the virus. Normally, this wouldn't be much of a problem — our users aren't stupid enough to download and run random executable files for no reason.

However, Nimda takes advantage of a horrible Internet Explorer bug. Some Web pages have background music, and Explorer can read those. Well, the worm includes itself as a .wav sound file. Once the user downloads the file, the .wav player looks at the file and realizes it isn't a .wav but a .exe. And what does it do with this mislabeled file? Does it throw an error and exit? Warn the user? Of course not. Instead, it just passes the worm on to be run. This means that just browsing can infect your machine.

Still, we knew that our e-mail gateway and proxy antivirus software had the right signatures, so we felt that we were protected. The final steps were to roll out the new signature to desktops and block other possible routes into the company. We shut down POP3 access Internet service provider e-mail servers and forced everyone to access the Internet through the proxy server. Those who were using Netscape Navigator on Unix were forced to try to get it to work with the Microsoft Proxy and the Windows NT challenge/response authentication we use. (If anyone has any tips for this rather painful process, let me know.)

The update to desktops was the last layer in our defenses.

Then, one of the desktops with the updated signatures sent in an alert.

It detected a Web page containing the virus in the machine's temporary Internet files. This didn't make any sense. The user had been browsing through the proxy. We knew the proxy had the right signatures. Yet somehow, the user had managed to receive the file. I sprinted to his machine and disabled it.

We brought the machine back to our offices for analysis to determine how the infected file got through. But just as we hooked it up to the forensics machine, another desktop alert came in. Clearly, our Web protection wasn't working, so we immediately pulled the plug. How many different ways could this virus attack us?

We set up a test machine with the right desktop signature and used it to browse through the proxy. In this way, we were able to discover the real issue. Messing with a live virus in this way is always risky, but we were watching closely and knew the desktop antivirus software would catch the worm. Our testing showed why the worm was making it to the desktop: our installation of InterScan WebManager, from Cupertino, Calif.-based Trend Micro Inc., was unable to stop the worm in HTTP traffic.

A few phone calls to security managers at other firms revealed that they were stopping the worm by deploying a new signature to Trend Micro's InterScan VirusWall product. Unfortunately, they had put the new protection in place only after the worm had broken into their environments. Like me, they were busy trying to clean up the worm and stop it from spreading.

Salvation at Last

I hung up and looked around — there was no mass e-mail, no probes at my resource shares, no outgoing HTTP scans. We weren't being hit. Something had saved us.

We stripped out WebManager and replaced it with Websweeper from Dublin-based Baltimore Technologies PLC, then we added Sophos Anti-Virus software from U.K.-based Sophos Inc. It was a bit of a stick-and-twine solution. We hacked our multiple-redundant solution into a number of proxies

in series. We had to give up authenticating users at each level and rely only on the Windows NT challenge/response authentication at the first tier. Each level was a single point of failure, but at least we could catch the virus before it made its way to the desktop.

Although many of the sites that had tried to infect us had been cleaned up, plenty of others were still serving up the virus. But another quick test browse confirmed that the worm wasn't making it to the desktop. We knew we were safe, and Web browsing could be turned back on.

The Netscape Unix users were also happy, because they'd stumbled across the upstream antivirus proxy server that required no authentication, so they could use it to browse the Internet.

Security by obscurity really doesn't work. They were so happy that they told us about it. Mistake. They won't be browsing next week when we complete the transition to Websweeper, but at least they are safe.

So what superb protection saved us from the hours of clean up that other companies suffered? What clever protection stopped the spread? The worm crashed because our company address book was too large for it to handle. ▶

SECURITY MANAGER'S JOURNAL

Quick Link
For more on the Security Manager's Journal, including past journals, visit:
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✉ This week's journal is written by a real security manager, "Vince Tuesday," whose name and employer have been disguised for obvious reasons. Contact him at vince.tuesday@hushmail.com or go to the Security Manager's Journal forum.

LENGTH OF
SUPPLY CHAIN

BROKEN LINKS

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AT&T

Start-up Pushes Instant Collaboration

Ikimbo tools tie real-time communications to Web-based document-sharing services

BY MARK HALL

INSTANT MESSAGING isn't just for kids anymore. With the release of new tools from start-ups like Ikimbo Inc., IT can enhance instant messaging's collaborative capabilities with the ability to share everything from Microsoft Office documents to back-end Oracle Corp. databases.

Chamberlain Williams Tison & Associates is using Herndon, Va.-based Ikimbo's Omniprise software to share résumés and job descriptions along with instant messages.

"We have a number of clients using Ikimbo," says Price Williams, a partner at the McLean, Va.-based high-technology recruiting firm. Williams adds that by linking his external customer base to his recruiting staff via Omniprise, he gets a competitive edge from the immediate combination of real-time messaging and document sharing.

"In our work, five minutes can be the difference between placing a candidate or not," he says. "And the difference between getting the hire or not is $20,000."

Deloitte & Touche LLP is in the midst of deploying 300 to 400 internal seats with Omniprise for document sharing, says James Roof, corporate development adviser at the New York-based consultancy. More important to Ikimbo, Deloitte & Touche agreed to help the company sell 67,000 seats in the next year.

Secure Collaboration

What makes Omniprise stand out from its many competitors, says Roof, is its strong security, which includes Secure Sockets Layer at the server level and protection at the administrative, group and end-user levels. The software, which can run in either an on-site user-licensed version or an Ikimbo-hosted version, also works with back-office software such as Oracle databases and Siebel Systems Inc. customer relationship management applications.

"It has a place in almost any company," claims Brian Stygar, chief technology officer at Ventera Corp., an IT consultancy also in McLean.

Omniprise is a "particularly valuable tool for professional services staff like ours," says Stygar. Using the software, he explains, they "can share information with their customers quickly and efficiently."

Ikimbo only began shipping Omniprise Version 1.0 in February, but it has found some enthusiastic supporters, especially in the venture-capital community, which this spring poured more than $10 million into the company during what can be charitably called lean times for start-ups.

Ikimbo CEO Edwin Miller says that's because the business case for secure, auditable, instant messaging for corporations is compelling.

"It fits in everything from professional services to supply chain operations," he says.

What makes Ikimbo special, claims Miller, is that its software can detect what device a user has at hand, whether it's a PC, a Research In Motion Ltd. BlackBerry pager or a Palm-Pilot, and format the message or even an attached document to fit the screen.

"Whether you're a salesman on the road or a technician on a customer site, you get what you want in the manner that you need it, instantly," Miller says.

Roof says he also likes its compactness. He points out that some competing products require up to 14MB of disk space when loaded on the client from a CD-ROM. Whereas the 1MB Omniprise client is easily downloaded over a modem.

Williams adds that another attractive quality of Omniprise "is that it's really cheap." He says other start-ups wanted to charge $5,000 to $10,000 for licensed versions of their products, plus he would have had to add them to his ongoing IT maintenance costs.

But using the hosted version of Omniprise, Williams' firm had no start-up costs and pays a monthly fee of just $25 per user. At that price, says Williams, "I promise you, it's worth it." ▶

> ## Whether you're a salesman on the road or a technician on a customer site, you get what you want.
>
> EDWIN MILLER, CEO, IKIMBO

Ikimbo Inc.

500A Huntmar Park Drive
Herndon, Va. 20170
(703) 904-4160

Web: *www.ikimbo.com*

Niche: Ikimbo's collaborative communications product includes instant messaging and file sharing for workgroups with support for mobile devices.

Company officers:
• Edwin Miller, CEO
• Eric Wimer, chief operating officer, co-founder
• J.P. Morgenthal, chief technology officer
• Jamey Harvey, vice president of business intelligence and co-founder

Milestones:
• October 1999: Company founded
• October 2000: Shipped beta version of Omniprise to first customer
• February 2001: Released Version 1.0 of Omniprise
• July 2001: Shipped Omniprise Version 1.2

Burn money: $10.25 million in venture funding from Cross Atlantic Capital Partners, Riggs Capital Partners LLC, William Blair New World Ventures LP and others

Employees: 60

Products/pricing: Licensed version of Omniprise 1.2 starts at $150 per seat; hosted version starts at $8,700 per month for 500 concurrent users.

Customers: Pricewaterhouse-Coopers, Deloitte & Touche, Teleglobe Inc. and others.

Partners: OTG Software Inc., Hewlett-Packard Co., Digicon Corp. and others

Red flags for IT:
• Not a replacement for e-mail or other communication methods.
• Hosted service requires putting shared files on Ikimbo's server.
• Instant messaging works only with Omniprise clients.

COMPUTERWORLD emerging companies

Message Makers Are on the Rise

Instant messaging is becoming all the rage in the business world because enhanced collaboration features such as those from Ikimbo and others make it a useful communications tool, according to analysts.

Robert Mahowald, an analyst at Framingham, Mass.-based IDC, forecasts that corporate use of instant messaging systems will rise from a healthy 6.5 million individuals last year to an astounding 229 million by 2005, for a phenomenal average annual growth rate of 104% during that five-year period.

That growth has spurred investors to pour millions into the market, creating lots of choices for IT to consider.

Ikimbo faces a host of start-up competitors like Washington-based Bantu Inc.; Cambridge, Mass.-based eRoom Technology Inc.; and Beverly, Mass.-based Groove Networks Inc.

In addition, Ikimbo has competition from an array of established industry behemoths such as AOL Time Warner Inc., Microsoft Corp. and Yahoo Inc. that also offer instant messaging services.

There are two significant differences between the start-ups and the giants, says Vernon Keenan, principal analyst at San Francisco-based Keenan Vision Inc. The former offer much better security than the big boys and let users integrate instant messaging services with back-office applications, he says.

Risks and Limits

Mahowald cautions that Ikimbo and its start-up competition could face hard times if AOL Time Warner or Microsoft make their messaging capabilities useful to more than just consumers or companies unconcerned with security or application integration.

Keenan adds that while instant messaging offers important services for handling urgent matters, e-mail will remain the dominant mode of intra- and intercompany communications.

And, Keenan says, instant messaging technology lacks industry standards for its varying formats, which could become a problem if IT departments are asked by their companies' outside supply chain and business partners to support more than one messaging system.

– Mark Hall

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Resume: Jennifer Falk, Federated Systems Group, 5985 State Bridge Rd, Duluth, GA 30096.

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All ABAP Programmer/Analyst positions require education in computer science, engineering, or related field and experience in ABAP programming.

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Human Resources Department THE HOLLAND GROUP, INC. P.O. Box 2099 Holland, MI 49422-2099 or email to hr@thehollandgroupinc.com or fax to 616-396-1511

We value a diverse work force.

ENGINEERING GENERAL MANAGER & CEQ - Overall management of the company. Ensure the project in conformance with technical contractual requirements & time schedules. Accept report from all managers. Establish company strategic goals & evaluate the managers performance. Must have in-depth knowledge of the Brazilian Air Transport System &experience with Air Traffic Control & Airports Projects. 10 yrs exper.or managing of multidisciplinary professional team with responsibility over multi-million dollar project.
PROGRAM MANAGER: Manage, specify, develop, integrate, install, quality assurance & logistic support for air traffic control & air traffic management systems. 7 yrs exper. managing min. 25 workers w/responsibility over multi-million dollar revenue. Experience w/ air traffic control & flow management, image management, command & control & simulators systems, application of mil-std procedures.
ENGINEERING PROGRAM MANAGER - Coordinate multidisciplinary projects, experience in air traffic control, defense & surveillance systems, logistics management, technology absorption. Conduct business communications in Portuguese with Brazilian govt. organiztns & parent orgniztn in Brazil. 7 yrs management experience min. 10 professionals with responsibility over multi-million-dollar revenue.
ENGINEERING EXECUTIVE VICE PRESIDENT - Technical, financial & commercial mgmt of procurement & acquisn of services and goods. 7 yrs exper. managing min. 30 workers with responsibility over multi-million dollar revenue. Exper. w/ mgmt of complex multi-disciplinary engineering projects.

All candidates must have B.S. in Engineering & fluency in Portuguese. 40 hr/wk. M-F 9am-6pm. Job in Woburn, MA. Prevail. Wage. Fax resume to 781-937 94 58.

A rapidly growing IT strategy and services co. located in Princeton, NJ is looking for top-notch computer professionals w/exp in a combo. of the following areas:
O/S: UNIX, AIX, HPUX, Solaris Win 9x/NT
RDBMS: Oracle, Sybase, SQL Server
ERP: Oracle, SAP, PeopleSoft Fin, Mfg, HR, SCM Apps.
Lang. & Tools: C, C++, VB, ABAP/4, Lotus Notes, ASP, VB Script, VJ++, ActiveX, COM/DCOM, MFC, Win32, MTS, ODBC, ADO, Access, Java, Java Script, Java Beans, JDBC, JFC, HTML, CGI, Perl, Designer 2K, Developer 2K, PL/SOL, SOL Plus, SQL *Loader, SQL*Reports, SQL*Forms, SQL*DBA, SQR, Crystal Reports
Reqmts: MS/BS degree w/ 1 or 2 yr exp in the field. Must be willing to travel to client sites throughout U.S. Alternatively, employer will accept a Bachelor degree + 5 yr progressive work exp in computer field.
We offer competitive salaries & benefits. Please fax resume to E. Partners at 609-580-0010 or mail it to
Resume@epartnersllc.com

Infosys International, a Plainview, NY based IT seeks IT professionals with industry exp. (various skills combination reqd.) in LINC 15, LINCLITE, ERGO, Unisys A-Series/2000, DMSII, etc. Some positions require MS or equiv. CS, Engg, Math, or rel. field. Others require BS or equiv. as above. Pay matching with exp. Foreign educ. equiv &/or combination of educ/exp. accepted. Travel/relocation reqd. Resume only to 110 Terminal Drive, Plainview, NY 11803.

Associate Research Engineer (Embedded Systems)

United Technologies Research Center has an immediate opening in its East Hartford, Connecticut office for an Associate Research Engineer (Embedded Systems).

Designs and develops embedded hard real-time systems and intelligent embedded information devices that enable the Company's products to communicate over proprietary local networks and the internet using multiple high-level languages. Develops networking and communications software for wireless communication links, and designs microcontroller based circuits and printed circuit boards for embedded systems using electronic design automation software.

Must possess a master's degree in Computer Science, Computer Engineering or a related field and at least one year of experience in the job offered or as a Software Engineer/Intern, including designing, developing, debugging and testing of application software and device driver software for embedded hard real-time systems using C and assembly language, developing networking and communications software for wireless communications links, using and modifying real-time operating systems, using Motorola and Microchip PiC 8-bit microcontrollers, designing microcontroller-based circuits and printed circuit boards for embedded systems, using electronic design automation software, designing digital and analog circuits to interface sensors and actuators with microprocessors, and designing software and hardware for multiprocessor systems.

Resume and/or cover letter must reflect each requirement above and specify reference code AREES or it will be rejected.

Forward resume to Donna Juttner, United Technologies Research Center, 411 Silver Lane, East Hartford, CT 06108.

Multiple openings. Senior Analyst/Programming. Duluth, GA. Develop, modify & implement complex information systems. Provide tech. consulting on complex projects. Formulate system scope & objectives through analysis, research, & fact finding. Analyze business requirements, translate customer requirements and recommend systems solutions. Communicate technical solutions to management, peers & business partners. Code & implement adv. applications that conform to FSG standards. Prep. estimates for new projects, enhancements & maintenance. Resolve production problems, anticipate trouble areas & take preventative measures. Req.: BS degree (or frgn. eqv.) in Comp. Science, Comp. Information systems or I.T. In lieu of Bachelor's degree, will accept equivalent progressive work experience. Working knowledge through academic coursework or exp. of COBOL II, CICS, Datacom, JCL, Roscoe, TCO, & Endevor. 40-hrs/wk. Resume: Jennifer Falk, 5985 State Bridge Rd, Duluth, GA 30096.

SSDI, Inc. is hiring Vice Presidents, SoftwareSolutions and Services. Please send resumes to 1964 Lafayette Street, Santa Clara, CA 95050. Tel: (408) 727-6921,4 or email to Krishna@ssdinf.com. Travel required, may be placed nationally.

Computer Engineer. Research Triangle Park, NC. Work closely with bench scientists, computational biologists & other scientific programmers to provide software solutions for high-throughput DNA sequencing, Laboratory Information Systems, & DNA sequence analysis. Develop graphical user interfaces (GUIs). Web & desktop-based scientific applications to manage molecular biology & sequence information. Provide application against Oracle-based sequence and biology-related databases. Req.: MS (or frgn. eqv.) in Comp. Science or rel engineering field. 1 yr exp in job offered or Comp. System Design & dev. Experience, which may have been obtained concurrently. must include the following: 1 yr exp. with object-oriented design & development, 1 yr exp. with user interfaces, Unix, JAVA, C/C++, 1 yr exp. with biological databases or relational databases using Qracle/SQL. Resume: GlaxoSmithKline Five Moore Dr. Research Triangle Park, NC 27709 Attn: Ms. Liza Roper Franklin.

JUNIOR SYSTEMS ANALYST to analyze, design, develop, test, implement and support application software systems and enterprise modules for the telecommunication and software industry using EJB, RMI, CQRBA, Perl, XML, Java, Java Applet, Visual C++ and Visual Basic under Windows, Linux and HP-UX operating systems; Perform duties under close supervision of project manager to ensure accuracy and that project progresses according to prescribed instructions and expected results are met. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related field with six months of experience in the job offered or as a Programmer. Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Vijay Vasandhani, President, Axiom Systems, Inc., 2550 Northwinds Parkway, Suite 440, Alpharetta, GA 30004; Attn: Job PK.

Consultant - Commerce Applications. Job location: Conshohocken, PA. Duties: Design & develop databases & arch. for Business-to-Business (B2B) & Business-to-Commerce (B2C) e-commerce sites using Java, EJB, XML, XSLT & Javascript on Oracle database. Design IT architectures & implement solutions using technologies incl. JavaScript & VBScript. Write & test software scripts & report bugs to developers using PVCS tracking tool. Conduct seminars on UML & Design Patterns for J2EE architects. Requires: M.S. in Comp. or Info. Sci., Eng or related field & 6 mths. exp. in the job offered or 6 mths. exp. as a Consultant or Software Eng. Coursework must incl. classes in Systems Software & Oper. Systems & Networks & Comm. Concurrent exp. must incl.: 6 mths. exp. designing & developing databases. EOE. 40 hrs./wk; 8:00 a.m. to 5:00 p.m. Send resume (no oalis) to: Diane Tuccito, AnswerThink, Inc., 817 W. Peachtree St., Suite 800, Atlanta, GA 30308.

COMPUTER/IT Systems Programmer Analyst. Requires Bachelor's or foreign equivalent in Computer Science or Computer Engineering and 2 years' experience in the job offered or 2 years' experience in the development of PeopleSoft HRMS. All stated experience must involve the development and administration of Oracle and AIX databases; and utilization of JavaScript, Websphere, HTML, Crystal reports, and SQL+. 40 hours per week. 8:00 a.m. - 5:00 p.m. Salary range: $75,000 to 85,000/yr. Apply with resume to Mr. Bob Remmes, ING North America insurance Corporation, 5780 Powers Ferry Road, Atlanta, GA 30327.

SYSTEMS ADMINISTRATOR to administer UNIX and NT systems, including systems backup, restoring, implementing and systems recovery planning using Cisco Router and Switches, and RAiD storage devices; Set up and manage VPN and firewalls; Analyze, design, develop and configure system architecture in a client/server environment using MS Exchange under UNIX and Windows NT operating systems; Design and develop intrusion detection tools and security tools; Monitor network infrastructure to improve productivity. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related field with two years of experience in the job offered. Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Vijay Vasandhani, President, Axiom Systems, Inc., 2550 Northwinds Parkway, Suite 440, Alpharetta, GA; Attn: Job SS.

Systems & Network Administrator. Duties: Resp. for install & configuration of Sun Solaris oper. systems onto servers. Provide problem determination & resolution, patch updates & regular maint. for SUN Solaris networks using SUN Diagnostic software. Perform RAiD config. using Solstice DiskSuite. Assist w/ direction & control of activities related to data planning & system/network mgmt. Coord. & implement security measures & maint. using TCP/IP networking. Requires: B.S. in Comp. Sci., Eng. or related field & 2 yrs. exp. in the job offered or 2 yrs. exp. as a Systems Eng. or Prog. Concurrent exp. must incl.: 2 yrs. exp. installing & configuring Sun Solaris oper. systems & 2 yrs. exp. performing systems config. EQE. 40 hrs./wk.; 8:00 a.m. to 5:00 p.m. Send resume (no calis) to: Donald Crockett, CTG, Inc., 4699 Nautilus Court South, Suite 101, Boulder, CO 80301-5306

SQFTWARE ENGINEER to design and develop logistics software using COM+, ATL, Visual C++, Active X, Visual Basic, XML, HTML and SQL Server on Windows 2000 platform; Develop advanced server pages and common gateway interfaces (CGI) for logistics web applications for Windows 2000 and UNIX environments. Requires: B.S. degree in Computer Science, an Engineering discipline, or a closely related field with two years of experience in the job offered. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Barbara Garner, Centricity, inc., 700 Galleria Pkwy., Suite 450, Atlanta, GA 30339; Attn: Job VS.

SQFTWARE ENGINEER to design, develop, implement, test, and maintain application software and GUIs for the telecommunication industry using object-oriented techniques, C/C++, MFC, Visual C++, Visual Basic, Shell Scripts, Crystal Reports, Clear Case and Sybase under Windows and HP-UX operating systems. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related with five years of progressively responsible experience in the job offered. Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Vijay Vasandhani, President, Axiom Systems, Inc., 2550 Northwinds Parkway, Suite 440, Alpharetta, GA 30004; Attn: Job KC.

SENIOR SOFTWARE ENGINEER to design, and develop iogistics software using C, C++, Visuai C, Visual Basic, ActiveX, COM+, and SQL. Server under Windows 2000 operating system; Develop advanced server pages and common gateway interfaces (CGI) for logistics web applications for Windows 2000 and UNIX environments. Require: B.S. degree in Computer Science/ Engineering, Physics, or a closely related field with four years of experience in the job offered or as a Programmer/Analyst. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Barbara Garner, Centricity, Inc., 700 Galleria Pkwy., Suite 450, Atlanta, GA 30339; Attn: Jon DV.

Eagle Creek Software Services headquartered in Deephaven, MN seeks senior consultants to develop, implement & integrate Front Office application products using Siebel or Clarify technology. Require Bachelor's degree in computer science, eng. or related. Require 3 years IT consulting experience with at least 2 years in Siebel or Clarify & at least 2 of the following: VB Script, Visual Basic, SQL, HTML, XML, Java, Javascript, ASP, Unix/AIX, Windows NT, RDBMS, COM, CQRBA or Active X. Positions ar available in various locations throughout the U.S. Fax resume to (972) 492-0566 or email careers@eaglecrk.com.

Paceline Systems is at the forefront of developing advanced switching systems, using Infini-Band (TM) technology for the next generation of web data centers to deliver new levels of performance, efficiency, and service flexibility. We currently have openings for the following:

Hardware Engineers: Design and implement circuit assemblies and electrical circuit card modules and component sections. Support the design of circuit modules PCB's including layout, stacking and routing. Debug prototype modules. Design verification testing and signal integrity testing of circuit modules. Will employ ViewDraw and Allegro Viewer. Requires 4 years experience in job or as hardware engineer for telecom industry. Also, demonstrated expertise designing and debugging circuit cards and experience using ViewDraw or Allegro Viewer and working with VHDL language and programmable logic design.

Software Engineers: Will work with senior engineers, you will be developing components of the next generation of networking services, based on high bandwidth Infiniband (TM) technology. Will work with principal and senior engineers to design specific networking services components based on Infinband technology. Will design and implement networking services and solutions based on functionality and requirements defined. Requires 1 year experience in job or in network software design/development. Also, demonstrated expertise in networking protocols or ATM Networking and using C/C++ and real time OS, such as UNIX or Linux, as well as using two or more of following protocols; DNS, TCP, SLP, DHCP, BOOTP, or BGP.

Senior Test Engineers: Will build test infrastructure for proprietary product verification organization. Will conduct extensive test automation script development for functional testing in accordance with internally developed test plans. Requires 4 years experience in software testing or development. Also, demonstrated expertise in software testing such as developing test plans and functional test automation in datacom test environments as well as experience using one or more scripting languages such as Tcl, Perl, Python

All positions require a Bachelor's degree (or equiv) in CS,EE, Math, Physics, or a closely related field. Interested applicants may send their resume to Bob Lippman, Paceline Systems, 50 Nagog Park, Acton, MA 01720, or F 978-263-8381. jobs@pacelinesystems.com

IntraLinks, Inc.
We are looking for qualified candidates to fill a number of open IT professional positions of all levels (including entry, advanced and managerial) in our NYC and Boston offices:

Manager of Technology
(Sr. Software Engineer)
Technical Sales Manager
Project Managers
Software Engineers
Consulting Software Engineers/
Analysts
Programmer Analysts
QA Analysts
Java Developers
Database Designers

Must have appropriate educational training and knowledge of relevant technologies. Salary commensurate with qualifications. IntraLinks is growing rapidly, and our enthusiasm is contagious. We have a strong foothold in our market and momentum to catapult us through the next millennium. Interested Applicants send your resume to: Meghan Boucher, INTRALINKS, 99 Bedford St., Boston, MA 02111, Attn: 092601.itjobs@intralinks.com

Senior QA Test Engr. Up to $70,000/Yr, Job Duties: Responsible for QA stds., procedures & metrics, testing proc., manual/automated test scripts for regression & load testing of web based applications, verification/validation of documents/codes at all stages of software development life cycle (SDLC) utilizing problem & code debugging, load run execution, fault tracking, & statistical analysis. Specific job functions: participate in every facet of SDLC including formulation of requirements, design, code reviews, testing; test software applications in Unix & Windows environments; select test cases to verify/validate requirements; identify process design flaws; integrate hardware & software components into working systems; develop & execute test scripts; document & maintain test plans, procedures & reports. Additionally, following code completion & unit testing, retest product against design requirements, document bugs, develop fixes & update test plans. Must be certified as a "COA- Certified Quality Analyst" & 2 years of exp. with Mercury Automated Test Tools, Object Oriented Programs, UNIX, Java, & Web Environment. Requires BS in Comp. Sci. or Engineering & 2 years of exp. Apply to Pathfire, 245 Hembree Park Drive, Ste. 100, Roswell, GA 30076 with proof to work permanently in US.

Sr. Database Administrator. Maintain multiple ADABAS and ORACLE databases (DB); install & maintain DB mgmt s/w & related products, incl ADABAS, NATURAL, PREDICT, ENTIRE-NET-WORK, ENTIRE-ACCESS, NATURAL SECURITY, & ORACLE RDBMS; design, implement, & maintain DBs & DB dictionaries; monitor DBs for validity, organization, protection, security, & performance; install & configure new versions; proactively monitor & maintain perform; maintain data & program security; & provide guidance & assistance for less exp personnel in DB app development, testing, & maintenance. B.S., Comp.Sci. or equiv.; & 5 yrs exp as Database System Eng, Consultant (or equivalent based on education & experience), 3 yrs of which shd be w/each: SAG products (incl ADABAS, NATURAL), ORACLE, UNIX, CICS, NATURAL SECURITY, PREDICT, DOS/VSE ESA, and ENTIRE. Exp. may be gained concurrently. $54,690/yr. 40 hrs/wk. All resumes must incl Soc Sec #. Appiy to your nearest Job Service office or send resume to Job Service, 1316-C N. Broad Street, Edenton, NC 27932. Refer to J.O. #NC 3203861, DOT Code 039. 162-010. If not a U.S. citizen, specify current visa status.

F/T Software Engineer. Responsible for creating Functional Specification documents based on design requests & producing & implementing High Level Designs for assigned functional areas. Perform Unit Testing on developed codes & troubleshoot defects found. Design & implement new modules/enhancements in client server environments & for the billing network system. Provide technical support to clients, evaluate business requirements & develop software & documentation according to established standards working w/ Centura Team Developer w/ embedded SOL, Logic Works, ERWin, Gupta SOL, Sybase SOL Server, MS SOL Server, Visual Basic, MS Access & Crystal Reports. Must have Bachelor's degree in Computer Science or related field. Foreign degree equivalent accepted. Must have 4 yrs. exp. in job offered or position w/ same duties. Salary: $63K. Send resume: Betsy Moya, Sema, 701 Waterford Way, Suite 300, Miami, FL 33126.

Vice President-Technology & Operations. Miami, FL. Duties: Invision, plan, & implement technology to enable operational efficiency & to increase revenue through the use of the Internet & other computer technology. Utilize Microsoft Windows XP, Sharepoint, Internet Information Server (IIS), XML, Mobile Information Gateway, Visual Studio, Java, HTML, & Active Server Pages. Develop backend programs integrating w/ Great Plains Accounting software & the use of IBM Websphere & related products. Use of in-depth knowledge of end to end business transactions in an international environment for consumer electronics. Prior significant mgmt background required. Develop business plans & build & manage a team to deliver products. Reqs: M.S. degree in Comp. Info. Systems & 3 yrs exp in the job offered or 3 yrs exp as a Sr Architect/Developer or combination thereof. Exp which may have been obtained concurrently must include 1 yr cf exp utilizing Java & IBM Websphere & 3 yrs exp developing & managing computer systems in a business to client relationship. Mail resume to: Kishinchand Parvani, Pres., Transcontinental Overseas, Inc., 1362 NW 78th Ave, Miami, FL 33126.

PROGRAMMER ANALYST
Analyze & eval. existg. or proposed software sys. Dvlps., implmts. & improves prgms., sys. & related procedures to process data using in-depth knowl. of the sys. dvlpmt. life cycle. Encodes, tests, debugs & installs opr. pgms. & other sys. software utiliz. knowl. of Visual Basic prgmg. tools. Bachelor's deg. or equiv. in Comp. Sci., Math, Commerce, Engrg. or Bus. plus 2 yrs. of exp. in position offered or as a Programmer Analyst, Software Engr. or Sys. Analyst rqd. Exp. must incl. a) RDBMS ENVR.: Oracle or Sybase; & b) PROGRAMMING LANGS.: Java or COBOL or PL/SOL. High mobility preferred. 40 hrs/wk, 8 am – 5 pm, OT as rqd., $66,670/yr. Oualified applicants report/submit resume to: Manager, Westmoreland County CareerLink, 300 East Hillis St., Youngwood, PA 15697-1808. Refer to Job Order No. WEB206416.

Integration Software Engineer needed to develop applications & implement advanced integration solutions using SeeBeyond, PeopleSoft, Java, XML, PeopleCode, Monk, & SQL. Apply to: C. Andrews, Global Enterprise Mgrs, 1434 Malcolm Dr, Deresher, PA 19025.

SYS. ENGR.
Analyze & eval. existg. or proposed software sys. Dvlps., implmts. & improves prgms., sys. & related procedures to process data using in-depth knowl. of the software dvlpmt. life cycle. Encodes, tests, debugs & installs opr. pgms. & other sys. software utiliz. knowl. of Visual Basic prgmg. tools. Associate deg. or equiv. in Comp. Sci., Math, Engrg., Bus. or Commerce plus 2 yrs. of exp. in position offered or as a Software Engr. or Sys. Analyst rqd. Exp. must incl. Access or SOL Server & Visual Basic. High mobility preferred. 40 hrs/wk, 8 am – 5 pm, OT as rqd., $66.671/yr. Oualified applicants report/submit resume to: McKeesport/Allegheny Cty. CareerLink, ATTN: JS Supervisor, 345 Fifth Ave., McKeesport, PA 15132-2600. Refer to Job Order No. WEB206426.

SENIOR SYSTEMS ADMINIS-TRATOR (Multiple Openings) Code, test, and implement client/server in a UNIX environment, applying knowledge of Shell Scripting, Solstice Backup, CAD/CAM, Excaliber EFS, et cetera; perform Sun Solaris server design and implementation, as well as numerous other application installations and configuration, and customer on-site development; troubleshoot and problem solve system installations on Sun E10, 000 Servers and File Systems including Veritas and Solstice; and plan and develop new computer systems or devise ways to apply existing systems' resources to additional operations. Must have four (4) years experience in the job offered, or as a Systems Analyst, Software Engineer, Systems Engineer, Program Analyst, or related, or any suitable combination of education, training, and experience, or related. Hrs: 8a-5p, M-F. Apply to Moorecroft Systems, Inc., Attn: Neville Saunders, Pres. and reference ad #EV0001, 202 Abbey Court, Alpharetta, GA 30004.

CoolPlex Developer II: Utilize CoolPlex & AS/400 to plan, manage, & coord dvlpmt & maintenance of business comp applics prgms. BS in comp sci, engg, or related field, certification by registered CoolPlex s/ware dvlpmt firm in CoolPlex, & at least 4 yrs of business application dvlpmt exp reqd for these positions. $72K & up. Resumes to: K Edwards, Rollins, Inc., 2170 Piedmont Road, NE, Atlanta, GA 30324.

Advanced Computing Technologies, Inc. is seeking a F/T Systems Analyst to design, develop, test, maintain, and support internet/intranet appl. using Java, PHP, CSS, VB Script, Apache Web Server, MS IIS, MS SOL, MS ACCESS etc under UNIX, WindowsNT OS; Maintain and trouble shoot LAN and WAN installations; provide on site maintenance support to clients such as debugging, modifications, fine tuning and code optimization. Require BS in CS or Engineering (any branch) with 2 yrs of relevant exp. Highly competitive salary. Travel Involved. Resumes to HR, 3355 Breckinridge Blvd. Suite 128, Duluth GA 30096.

ABZ CONSULTING, Inc, Atlanta, has immediate multiple openings for exp'ed Prog/Analysts, S/W Engineers and DBAs to develop S/W applications using various H/W, OS, OO mythology/principles, tools, software packages and languages for data warehousing, web/wireless/internet technologies, CRM implementation etc. BS/MS degree req. Highly competitive salaries, travel/relocation req. Send resumes to 3140 Briarcliff Road, Suite A, Atlanta, GA 30329.

Compaq Computer Corporation, the industry leader in world-changing technology is hiring for all levels of the following positions in our New England, New York and New Jersey facilities: Systems, Software and Hardware Engineers and Technical Consultants/Analysts. Interested candidates should submit resume to: HR, Compaq Computer Corp., 200 Forest Street, MRO1-1/K28 Marlboro, MA 01752 or contact through email at jobs.jmm@compaq.com

SOFTWARE ENGINEERS
TIBURON NETWORKS, INC., a small Boston-area company engaged in sophisticated solutions for the optical-powered Internet, seeks to fill Software Engineering positions. Required is a Bachelor's degree in a relevant field (some positions require a Master's degree), and between 3-5 years relevant experience. Specifically:
• Senior Principal Software Engineer / Technical Lead (Forwarding Data Path);
• Senior Software Engineer (Routing Systems);
Starting salary from $90,000 - $140,000, 18 days annual earned time off, medical insurance, and other industry competitive benefits. Respond with resume only to: Ms. Judith Hinkle, Tiburon Networks, Inc., Dept. IMSP, 200 Minuteman Road, Andover, MA 01810.
Email: IMSP@tiburonnet.com
Fax: (978) 933-8030 An EOE.

Cholan, Inc. is seeking a Full time Software Engineer to design, develop, test, maintain and support internet/intranet appl using Java, JDBC, Servlets, XML, C++, VB, Oracle etc under UNIX, WindowsNT OS; develop GUIs, write product documentation and integrate test plans; provide on site maintenance support to clients such as debugging, modifications, fine tuning and code optimization. Require BS or foreign equiv in CS or Engg (any branch) with 2 yrs of relevant exp. Highly competitive Salary. 70% travel to client sites involved. Resumes to HR, 6209 W. 126th Street, Overland Park, KS 66209.

IT Careers in Healthcare

Most everyone is familiar with the cost pressures faced by the medical/ healthcare industry. From government regulations to improving access to and quality of care, healthcare systems are turning to information technology to enable them to work smarter, more quickly and in the best interests of their patients.
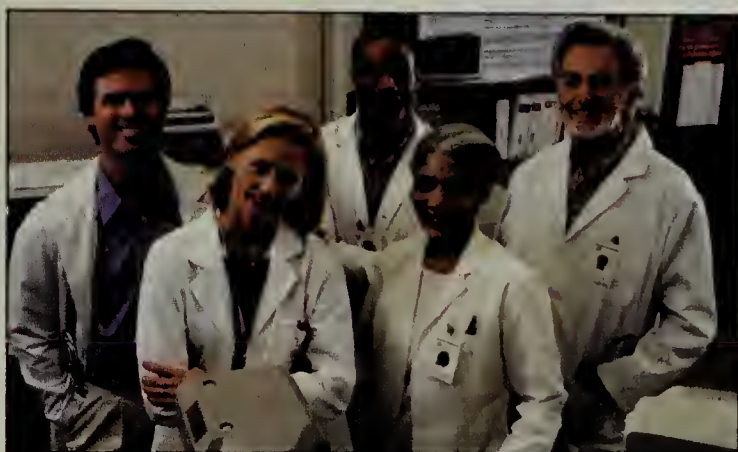
On the retail end are companies such as **Walgreens Co.**, headquartered in Chicago. Jennifer Mote, manager of IT recruitment at **Walgreens**, says the IT challenges are broad and exciting. In addition to managing the pharmaceutical needs of literally thousands upon thousands of consumers, **Walgreens** has established an Intranet-based application that provides business-critical information from the data warehouse to more than 3,000 retail store managers. Inventory management systems and Intercom Plus, a pharmacy application, are among the projects developed and implemented by **Walgreens**' more than 700 information technology employees.

According to Mote, the company offers opportunities in application development, systems architecture, database management and design, systems administration, network design, as well as the Help Center to support the retail stores. "These opportunities call upon a wide variety of technical skills such as JAVA, Internet/ Intranet development, OO, Client/Server, ORACLE and AS/400 development skills," says Mote. "Just as important to **Walgreens** are people who want to be part of our team and who will be creative about developing the next generation technology solutions for our business needs.

"Technology is a critical component to our operation," she adds. "We have highly complex IT systems, and are extremely innovative in how we apply technology."

On the care provider side are groups such as **Stellaris Health** and **Kaiser Permanente** who are managing systems and back-up for physician care for literally thousands of patients. **Stellaris**, headquartered in White Plains, NY, has four hospitals – Lawrence Hospital in Bronxville, White Plains Hospital Center, Northern Westchester Hospital in Mount Kisco and Phelps Memorial Hospital in Sleepy Hollow.

The health system brought the four hospitals and associated physicians together two years ago and introduced the first phase of an IT upgrade. "IT is one of the principal strategies in the partnership," says Michael Pagliaro, **Stellaris'** vice president for human resources. The system introduced HBOC to standardize the business systems for all four hospitals and is now moving into its second and third phases where shared clinical information and lab information will be introduced.

To enable the new IT design, **Stellaris** is hiring systems analysts, project managers and business analysts. "These are more senior positions," says Pagliaro. "We are looking for people with experience in the systems and in the healthcare environment. There is plenty of leeway in the healthcare industry to explore the best ways to do things."

Headquartered in Oakland, CA, **Kaiser Permanente's** information technology organization boasts that it's one of the largest IT shops in the United States. The organization has launched a multi-year, groundbreaking project to implement a clinical information system to support care delivery to more than 8.1 million patients worldwide.

"That means we continuously search for talent in architecture design, integration, internal web portal development and application development," says Michael Winkler, marketing manager for **Kaiser Permanente's** Information Technology organization.

The majority of **KP's** jobs are in California, with some regional hiring in Colorado, Ohio, Atlanta and the mid-Atlantic states. "We are the best-kept secret in the IT profession," Winkler says. "Some of the things we're doing in healthcare are revolutionary."
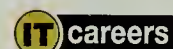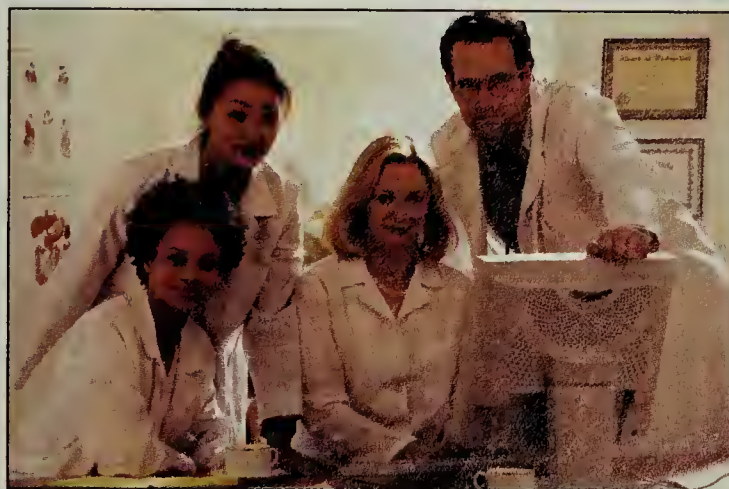
IT careers

For more job opportunities with healthcare firms, turn to the pages of ITcareers.
- If you'd like to take part in on upcoming ITcareers feature, contact Jonis Crowley, 650.312.0607 or jonis_crowley@itcareers.net.
- Produced by Carole R. Hedden
- Designed by Aldeboron Graphic Solutions

Advertising Supplement

IT Careers in Atlanta

Atlanta has long been a growing, thriving community. Even with an economic slide, the metropolitan area affords job growth and opportunity for information technology professionals.

The **Southern Company**, headquartered in Atlanta, is the South's largest energy supplier. And, while information technology links the five **Southern Company** utilities (Alabama Power, Georgia Power, Gulf Power, Mississippi Power and Savannah Electric), the company also uses IT to power its energy trading function, custom energy-related services and its wireless telecommunications business. As the winner of JD Power & Associates' top ranking for southern utilities, **Southern Company** increasingly uses IT to enable customers to troubleshoot, manage services and self-serve.

Dan Traynor, director of application services for **Southern Company**, says information technology is critical to reaching the company's primary goals of 5% annual earnings growth and leadership in industry customer satisfaction. Customers use online services to request new service, report problems, review their bills and make payment electronically. Information Resources will introduce this year a new release of EnergyDirect.com, which assists commercial and industrial customers in managing their energy utilization. Projects under way include extension of online employee services and a cooperative inventory management system with **Southern's** largest suppliers.

Traynor says **Southern** is "always on the lookout for people with strong skills in application development, application design and project management. We want people with these fundamental skills." Traynor also looks for people who fit with the company's culture, known as "Southern Style." "You can sum it up simply," he says. "We work with a genuine respect for all stakeholders, to include customers, partners, shareholders, suppliers, employees and team workers – while reaching for higher and higher performance. The two in combination say we are a company where we really rely on one another."

While **Southern Company** has been part of the Atlanta landscape for the past century, so too has been **Equifax Inc.** Founded in 1899 as Retail Credit Company, **Equifax** is one of the world's leading identity authentication services. **Equifax** uses its IT resources to support global commerce, bringing together buyers and sellers through information management, consumer credit systems, authentication and e-commerce capabilities. The company holds a patent for its eIDverifier product, used to authenticate individuals on the Internet. The company also offers Credit Watch, which allows consumers to protect their identity and financial health.

Katherine Crew, vice president for **Equifax** human resources, says the company uses a combination of legacy and leading-edge systems. "We continuously enhance our systems and re-engineer processes around our products," she explains. "Our core credit file was written in Assembler and we work to enhance its data quality. At the same time that we need these relatively old skills, we also need individuals with JAVA and C++ skills." Because **Equifax** has a strong cultural focus on learning, the company assures that those bringing the more dated skills, such as Assembler, also have the opportunity to receive training in new technologies.

Crew says the company hires those with solid programming abilities, as well as those with skills in test and business analysis. "We also look for people with business acumen, who can determine the technologies that will help us achieve business needs," she says. "We look for people based on what they can do today, but also for their potential."

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Biometrics

pany will use the mass appeal of Windows XP to help broaden the appeal of biometrics.

Microsoft's support for Fast User Switching, which allows users to switch profiles without shutting down their applications or completely logging off a shared PC, has become the centerpiece of a native fingerprint biometric system from Redwood City, Calif.-based DigitalPersona Inc.

DigitalPersona's U.are.U Personal fingerprint scanner system is fully integrated with Windows XP. The personal edition of the system follows the release of the U.are.U Online and Professional editions, which the company has sold to Los Angeles-based California

Commerce Bank, The Coca Cola Co. in Atlanta and several medical services firms.

"Over the course of hundreds of years, signing a piece of paper has become part of our lifestyles," said DigitalPersona CEO Fabio Righi. "We are trying to accomplish the same thing with biometrics. Little by little, people will get used to it," he added.

Some corporate users are already getting used to biometrics. Carlton Musmann, senior vice president at First Financial Credit Union in West Covina, Calif., said his bank's 70,000 customers are demanding that it provide a larger number of secure online banking capabilities. And he said the only cost-efficient technology that's capable enough is fingerprint biometrics.

"We compared fingerprint technology to retinal scan, and

> Over the course of hundreds of years, signing a piece of paper has become part of our lifestyles. We are trying to accomplish the same thing with biometrics.
>
> **FABIO RIGHI, CEO,**
> **DIGITALPERSONA INC.**

the cost difference was significant," said Musmann. The bank now offers 10 Saflink Corp.-based fingerprint biometric kiosks throughout Northern California.

"You can do anything that you can do through a clerk," he said. "Users don't need an ATM card, a wallet or anything."

The sticking point across most vertical industries has been the integration challenge posed by multiple legacy applications and the price of biometric hardware, said Walter Hamilton, vice president of business development at Saflink, in Bellevue, Wash. However, both of those challenges have been solved with interoperable middleware and biometric devices that cost $100 or less, he said.

"Some have shied away from the integration challenge in the

past," said Lloyd Tanaka, senior business manager for eTrust security products at Computer Associates International Inc. in Islandia, N.Y. However, in light of the recent terrorist attacks and the push to improve security, "there's no resistance conceptually to what needs to be done," Tanaka said.

Biometrics "is really all about deploying security and convenience at the same time," said Righi. ▶

Hospital Taps Biometrics for Single Sign-on

St. Vincent Hospital and Health Services in Indianapolis has rolled out a biometric authentication pilot project that combines the practicality of single sign-on workstations with biometric authentication devices for roaming enterprise users.

As part of a 50-person pilot project in the hospital's oncology unit, St. Vincent plans to eventually roll out a fingerprint identification system Saflink that works in conjunction with Computer Associates' eTrust single sign-on platform. The hospital plans to support more than 5,000 users within two years.

"Biometrics has become synonymous with single sign-on," said Bruce Peck, information security manager at St. Vincent. "We saw this as a way to raise the bar for security across the board."

The hospital is showing itself to be a robust proving ground for the combination of the two capabilities. And officials at both the hospital and the software vendors said they're confident that if it can work there, it can work at any company. "The key thing is to get users on and off the workstations quickly. If it slows them down, it impacts patient care," said Peck.

– Dan Verton

H-1B Visas

dustry groups argue that the U.S. isn't supplying enough workers with specific technical skills to meet demand. H-1B employees, many of whom were trained at U.S. universities, can work here for six years and possibly longer under some exceptions through the visa program.

The battle over H-1B visas is far from over. The cap will decline to 65,000 at the end of fiscal 2003, which means industry groups will have to renew their lobbying of Congress at about this time next year.

Unless the economy turns around, keeping the cap at the current level could be difficult, said Lynn Shotwell, director of government relations at the American Council on International Personnel Inc. in Washington.

Even so, despite the current state of the economy, "I think the arguments are just as

strong [for H-1B]," said Shotwell.

Many H-1B opponents believe it would be in Congress's interest to lower the cap to stimulate domestic hiring. Doing so "would clearly be beneficial for American workers and new college graduates," said Mark Krikorian, executive director of the Center for Immigration Studies in Washington.

But Harris Miller, president of the Information Technology

Association of America (ITAA) in Arlington, Va., said that if the cap isn't reached, "it shows that market forces are working and employers are not abusing the program. It's a cap, not a required number."

An ITAA study this spring estimated the U.S. IT workforce at 10.4 million people and projected demand for new workers this year at approximately 900,000 — down from a demand for 1.6 million new

workers last year.

Amar Veda, a spokesman for the Budd Lake, N.J.-based Immigrants Support Network, which helps H-1B visa holders, said the INS statistics on H-1B use are misleading and reflect only the number of approved petitions that companies have received— not people who have actually come to the U.S. for work.

"Many of the companies get the petitions approved and keep them in reserve, and they are not used," said Veda. And since the Sept. 11 terrorist attacks, no one is coming to the U.S. "There are no jobs," he said. "In fact, people are going back." Moreover, the INS figures don't show the number of H-1B holders who have lost jobs in the downturn.

"The net result is that more and more H-1B workers are leaving the U.S., and many who have begun the lengthy green-card process will be unable to successfully obtain that benefit," said Vic Goel, an immigration attorney in Greenbelt, Md. ▶

Up and Down Visa Count

The U.S. government's fluctuating cap on H-1B immigrant visas:

Year	Cap
1997	65,000
1998	65,000
1999	115,000
2000	115,000
2001	195,000
2002	195,000
2003	195,000
2004	65,000

FRANK HAYES/FRANKLY SPEAKING

The More Things . . .

FIVE YEARS. What a difference a half-decade makes, eh? Five years ago, the biggest battles IT people faced were Microsoft vs. Netscape, dot-coms vs. brick-and-mortars, and everybody vs. Y2k. Terrorism? Recession? War? They weren't on our radar — and didn't even seem possible.
This week marks the end of my fifth year writing this column. (Yeah, it seems more like 50 to me, too.) How much *has* changed in five years? To find out, I looked through some old columns.
Know what's really scary? That so much *hasn't* changed.

This is from **late 1996**: "At Comdex, one Microsoft product manager was floating a trial balloon for a new Java strategy: building Windows-only Java compilers and tools that would make Microsoft Java incompatible with other vendors' versions."

Yes, that sounds a lot like Visual J# .Net to me, too. We just didn't have a name for it then.

And this, from **January 1997**: "IS managers know the problem as the 'skills crisis.' They're spending big bucks for top talent in hot technology areas such as the Internet, data warehousing, enterprise client/server applications and, of course, year 2000 Cobol fixes. But those hot new hires are often out the door as soon as a better offer comes along."

That's changed — for the moment, and only thanks to the economy. When business improves, we'll still have a skills crisis. The only thing different is which technologies are hot.

From **February 1997**: "The Web was never designed for enterprise applications. It was designed to fetch and display text and pictures, and its core standard — hypertext markup language, or HTML — does that very nicely. But what's the standard way of performing a transaction across the Web? What about checking a business rule? Or communicating between independent programs? Answer: Those Web standards don't exist."

They still don't.

March 1997: "The Internet is turning your IS organization into a house of glass. Suddenly, customers can see — or think they can see — everything wrong with you. Every glitch, every bad design decision, every operational problem — they're all on display on your Web site. Welcome to the World Wide Web. IS just got a lot more visible."

If anything, we're even more exposed today.

June 1997: "New systems don't make and sell products and services. Users do. That's where profits — and IS paychecks — come from. And the users who generate the most profits wield the most clout. When they howl, management listens. When they make a stink, management makes accommodations — which can wreak havoc on your new-system plans."

Anyone see changes there?

Or here, from **August 1997**? "Got Windows NT? Did it replace Windows 95? Did you have every version of Windows 3.x before that? Have you upgraded your word processors and spreadsheets regularly? How about your Web browsers? And your development tools –– Visual Basic and PowerBuilder and whatever Web-page editor you're using this week? That's thrash — the unceasing cycle of continuous upgrades that keeps software vendors swimming in profits and corporate users drowning in unproductive labor."

August again: "First rule of security: Don't trust. Don't trust walls. Don't trust locks. Don't trust people."

That hasn't changed since 1997.

And four years ago this week — in **October 1997** — I wrote: "So now Microsoft has truly nailed down its position as the IBM of the '90s. It's got an industry in its grasp — and the Justice Department breathing down its neck."

Yes, a few things are gone. Y2k is history. We've seen sideshows come and go: Napster, dot-com mania, a truckload of buzzwords. But after a wild five-year ride, the big issues — and the big problems — are still the same.

And the more things change, the more we just can't get rid of 'em. ❱

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

The 5th Wave

"We sort of have our own way of mentally preparing our people to take the MCSE NT workstation exam."